

ANIMAL KEEPERS' FORUM



OCTOBER 2010

The Journal of the American Association of Zoo Keepers, Inc.

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36th Anniversary - 1974 - 2010

MISSION STATEMENT

(Revised April 2009)

American Association of Zoo Keepers, Inc.

The mission of the American Association of Zoo Keepers, Inc. is to advance excellence in the animal keeping profession, foster effective communication beneficial to animal care, support deserving conservation projects, and promote the preservation of our natural resources and animal life.

This month's cover features a Brown Pelican (*Pelicanus occidentalis*) drawn by Marie Vester, a Docent and Research Volunteer at the Los Angeles Zoo, Los Angeles, CA. Brown pelicans are strictly coastal, and live on the Pacific, Atlantic, and Gulf coasts north to Nova Scotia. They are rarely seen inland. Brown pelicans are dark and bulky. The sexes are similar in plumage and both are 4-4.5 ft (114-137 cm) long. The head is white with a pale yellow wash on the crown; the long bill is grayish; back, rump, and tail are streaked with gray and dark brown; the breast and belly are a blackish-brown; eyes pale yellow; and legs and feet are black. Immatures have brownish-grey necks and white underparts. All pelicans have bills that are as long or longer than their heads. The huge naked skin pouch suspended from the lower half of the hooked bill holds two or three times more than the bird's stomach - about three gallons of water and fish. Pelicans hold their catch and let the water drain from the corners of their mouths before they swallow. Fish are never carried in the pouch, but in the gullet or esophagus. The pouch, besides acting as a dip net, is also pulsated in extreme heat to allow cooling. Pelicaniformes are the only birds that share in common a totipalmate foot, that is, one in which all four toes, including the hind one, are united by a web of skin. Male pelicans pick out the nesting sites and perform an "advertising" display which attracts the females. Pelican nesting peaks during March and April; nests are in colonies either in trees, bushes, or on the ground. Those placed in trees are made of reeds, grasses, straw, and sticks; if on the ground, nests consist of a shallow scrape lined with feathers and a rim of soil built 4-10" above the ground. They lay 2-3 chalky white eggs. Incubation is about 28-30 days; young walk out of the nests on the ground about 35 days after hatching but do not leave treetop nests until about 63 -88 days for their first flight. Brown pelicans were recently severely endangered in the US due to the use of DDT. Since the pesticide's ban in 1972, there has been a full recovery on the east coast, and other populations are showing steady improvement. Threats today include birds becoming entangled in abandoned fishing lines and flying into overhead lines. Other factors include human disturbance of nesting colonies and reduction of fish stocks by excessive commercial fishing for sardines and other small fish. Several rescued Brown Pelicans have been exhibited at the Los Angeles Zoo. Most of these birds have come from the Santa Barbara area and their injuries prevent them from being released. Thanks, Marie!

Articles sent to Animal Keepers' Forum will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for AKF. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or email contributions of late-breaking news or last-minute insertions are accepted as space allows. Phone 785-273-9149; FAX (785) 273-1980; email is akfeditor@zk.kscoxmail.com< If you have questions about submission guidelines, please contact the Editor.

Deadline for each regular issue is the 10th of the preceding month.

Dedicated issues may have separate deadline dates and will be noted by the editor.

Articles printed do not necessarily reflect the opinions of the AKF staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

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BFR Website: <http://aazkbfr.org>

Scoops & Scuttlebutt

Chance to Win Free Conference 2011 Registration Offered

Get your training and enrichment articles into the Enrichment Options & Training Tails Column editors to be considered for a complementary registration to the 2011 AAZK National Conference in San Diego.



The AAZK Behavioral Husbandry Committee will choose one article from those published between July 2010 through May 2011 in the *Animal Keepers' Forum* Enrichment Options or Training Tails columns to be awarded a FREE 2011 conference registration.

The winning author will be notified by June 2011. Only one gratis conference registration will be awarded no matter how many authors are on the paper – designation of which author of a multiple author paper is to receive the free registration is not the responsibility of AAZK or the AAZK Behavioral Husbandry Committee. The winning registration is non-transferable and has no cash value, so if the chosen author is unable to utilize the free registration another author will be selected by the Committee.

AZA Professional Development Opportunities

There's still time to register for the November session of AZA Schools. Classes run from November 15-20 at Oglebay Resort in Wheeling, West Virginia. Enrich your career with these and other professional training courses:

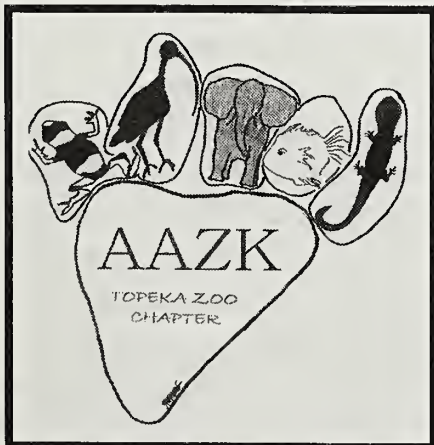
Meeting Your Institutional Mission with Program Animals

Explore the range of opportunities for program animal use! This course provides students with the knowledge to effectively develop and manage formalized programs utilizing animal ambassadors. By focusing on a range of methods, rather than teaching a single "recommended" approach, students will be better prepared to develop an approach that fits their institution's mission and philosophy.

Developing an Institutional In Situ Conservation Strategy

Position your institution to become an active member of conservation community! This course addresses important concepts in field conservation. It will provide participants with a framework and some practical guidelines on how to establish successful conservation initiatives, provide plans to assist in marketing and fund raising, and guidelines to help select projects and evaluate their impact.

MIMPA and DIISCS are only offered every other year. Details and registration information for all AZA Professional Training Courses can be found at www.aza.org/professional-training. Email azatraining@aza.org with any questions.



Editor's Note: We would like to thank all the members of the Topeka AAZK Chapter located at the Topeka Zoological Park, Topeka, Kansas for their generous donation that is helping to underwrite this issue of *Animal Keepers' Forum*.

From the President

On behalf of the AAZK Board of Directors, I want to congratulate the Philadelphia Chapter of AAZK on hosting a very successful conference in August. The Chapter showed great organization and attention to detail, and provided our conference delegates with a professional development opportunity of high educational value, as well as the chance to network and learn from many North American colleagues. I came home informed and inspired and ready to settle back into my normal routine, yet also looking forward to next year's conference in San Diego. Unfortunately, there was one negative incident from conference week that continues to hold my attention, despite the fact that it had nothing to do with the conference or AAZK.

I arrived in Philadelphia early for meetings with the AAZK Board of Directors, and soon received word that a 24-year-old animal caretaker was killed that day by a captive black bear. Sadly, a fatality in the animal care business is not that unusual; an average of ten animal care professionals lose their lives each year in a work-related accident. The part of the story that stood out to me was the location in Columbia Station, Ohio, less than ten miles from my house. For years I had known about the private facility that lies in a southern suburb of Cleveland where urban sprawl has created a tapestry of large rural properties mixed with new housing developments.

The owner of the bear, who rents the property, boasts a collection of four tigers, eight black bears, 12 wolves, a lion, and six dogs. He is best known locally as the owner of "Caesar the Wrestling Bear", and would take the 700-pound bruin on a circuit of bars, festivals, and county fairs where attendees would pay to wrestle the bear. Legal action against the owner ended Caesar's wrestling career in 2008, and also resulted in a \$14,000 fine when the owner refused to allow an inspection of his facility and threatened federal officials, according to *The Plain Dealer* reporter Michael Sangiacomo.

At this point, you may be wondering what all of this has to do with AAZK. Let me go back to the 24-year-old caretaker who lost his life in a tragedy. I don't know anything about his personal or professional life, his educational background, or experience working with exotic animals, but he accepted a position to care for exotic animals and, in many ways, that made him our colleague. It is why I have strongly advocated that AAZK membership should not be based on accreditation, or exclusive to any group within the animal care profession. Our mission remains to advance the profession of animal care, to provide professional development opportunities for our membership, and ultimately, positively affect the lives of captive animals everywhere. The competition to join our profession is fierce, and for those not lucky enough to receive employment in a first-class facility, sometimes small, private, and possibly questionable facilities like the one in this story are one of the few opportunities available. My stance is that there are no animal care professionals more in need of AAZK's educational resources than those caring for animals in what are now commonly called, to be politically correct, "zoos needing improvement".



I wonder, what should be the role of accredited zoos and zoo-related organizations when it comes to outreach towards local "zoos needing improvement". We rarely give a second thought to providing outreach and training to "zoos needing improvement" in developing countries, to establishing sister zoo relationships with far-away zoos in exotic lands. What about the facilities in our own local communities? How far would safety training, enrichment ideas, and educational workshops on the best practices of animal care go in these local facilities that need access to our expertise? As Sally Walker and Dave Morgan presented to the World Association of Zoos and Aquariums (WAZA), the worst facilities are still recognized by the public as zoos, and therefore

hurt the reputation and credibility of all facilities in our industry. As Dave Morgan, WAZA Council Member, once told me, there are a lot more zoos needing improvement in the United States and Europe than there are in all of Africa. The message is clear that we have a lot of work to do in our own backyards. There may be a difference between what we consider a roadside zoo, and the private collection of one individual, but as the subject matter experts, I believe our industry has an obligation to help those we can, and work towards closing the worst of the facilities.

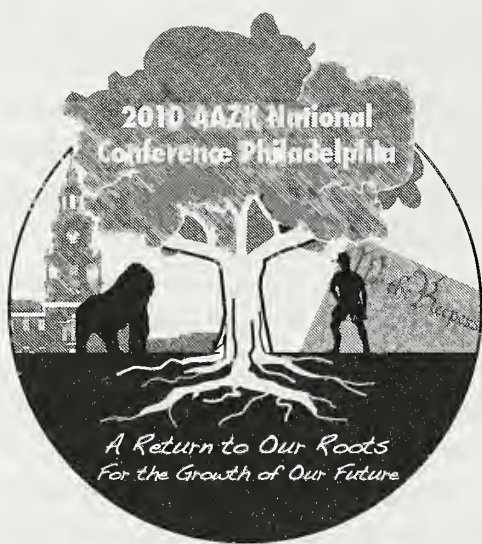
My own personal regret is that my home state of Ohio is one of 20 states with no laws related to the private ownership of dangerous, non-native animals. Ohio is also recognized as one of the top two states in the nation for exotic animal sales, auctions, and swap meets. A personal friend regularly attends these events, and reports how easily one can purchase a lion, tiger, or bear. Oh my, for \$500 you can purchase a cub of any one of these species or many others. In other words, any member of the community can purchase a tiger just as easily as they can go to an electronics store and purchase a television or laptop computer. I think there is something wrong with that, especially when I think of Caesar the Wrestling Bear that was, according to Sangiacomo, kept in his owner's condominium prior to their move to Columbia Station, Ohio.

In Ohio's defense, there is a plan working its way through legislation to "improve the treatment of farm animals and ban wild animals from private ownership". The rules may be enforced by the Ohio Department of Agriculture and/or the Ohio Department of Natural Resources, and would not apply to zoos, aquariums, circuses, or animal rescue/rehabilitation centers. The plan was considered controversial by some and still needs to make its way through the political and legislative process, but at least appears to be a step in the right direction. Specified in the plan is the prohibition of the sale or possession of dangerous big cats, bears, primates, snakes, alligators and crocodiles. Current owners would be grandfathered in, and be allowed to maintain their animals. Unfortunately, even if Ohio is successful in its legislation, that still leaves 19 states with absolutely no legislation on the private ownership of exotic animals.

Historically, when it comes to private ownership of exotic animals, the role of accredited zoos is usually limited to responding to media requests after an accident at a private facility. The media may ask, "How dangerous is the animal? How much space does that animal need? What can be done to improve safety at the facility and throughout the surrounding neighborhood?" What never seems to be asked is "What is the stance of accredited zoos on the private ownership of exotic animals?". I think that question needs to be answered. As the subject matter experts on the care of exotic animals, why is our industry mostly silent on this issue? Is it the responsibility of animal rights groups, local, state, or federal authorities, or should our industry step up to the plate? Over the years, our industry responsibly moved from a focus on entertainment and strategically jumped into the arenas of conservation, education, even sustainability. Perhaps it is time we establish ourselves as the subject matter experts on animal welfare. Think of some of your favorite species, and consider that somewhere in the world, possibly less than ten miles from your home, a private owner is keeping those species, quite often in poor conditions, and somewhere else in the world, people are working to supply the demand in the exotic pet trade. What is our role as subject matter experts, as animal care professionals, as an industry? I'm interested to know your thoughts.

A handwritten signature in black ink that reads "Shane Good". The signature is fluid and cursive, with the first name "Shane" and last name "Good" clearly legible.

Shane Good, AAZK President



The Greater Philadelphia Chapter of AAZK would like to thank everyone who participated in the 2010 National AAZK Conference in Philadelphia!

Even in these difficult economic times, we had more than 200 delegates in attendance. We were especially excited to see so many keepers from our neighboring facilities. Thank you to everyone who presented a paper or helped with one of the many workshops.

This conference would not have been possible without a great deal of support from the Philadelphia Zoo and our conference sponsors. We'd especially like to thank our fellow AAZK Chapters that participated in the Chapter Challenge this year that raised \$3,500 towards the cost of hosting the conference.

Chapter Challenge Participants:

Columbus
Dallas
Galveston
Little Rock
Milwaukee
Salt Lake City

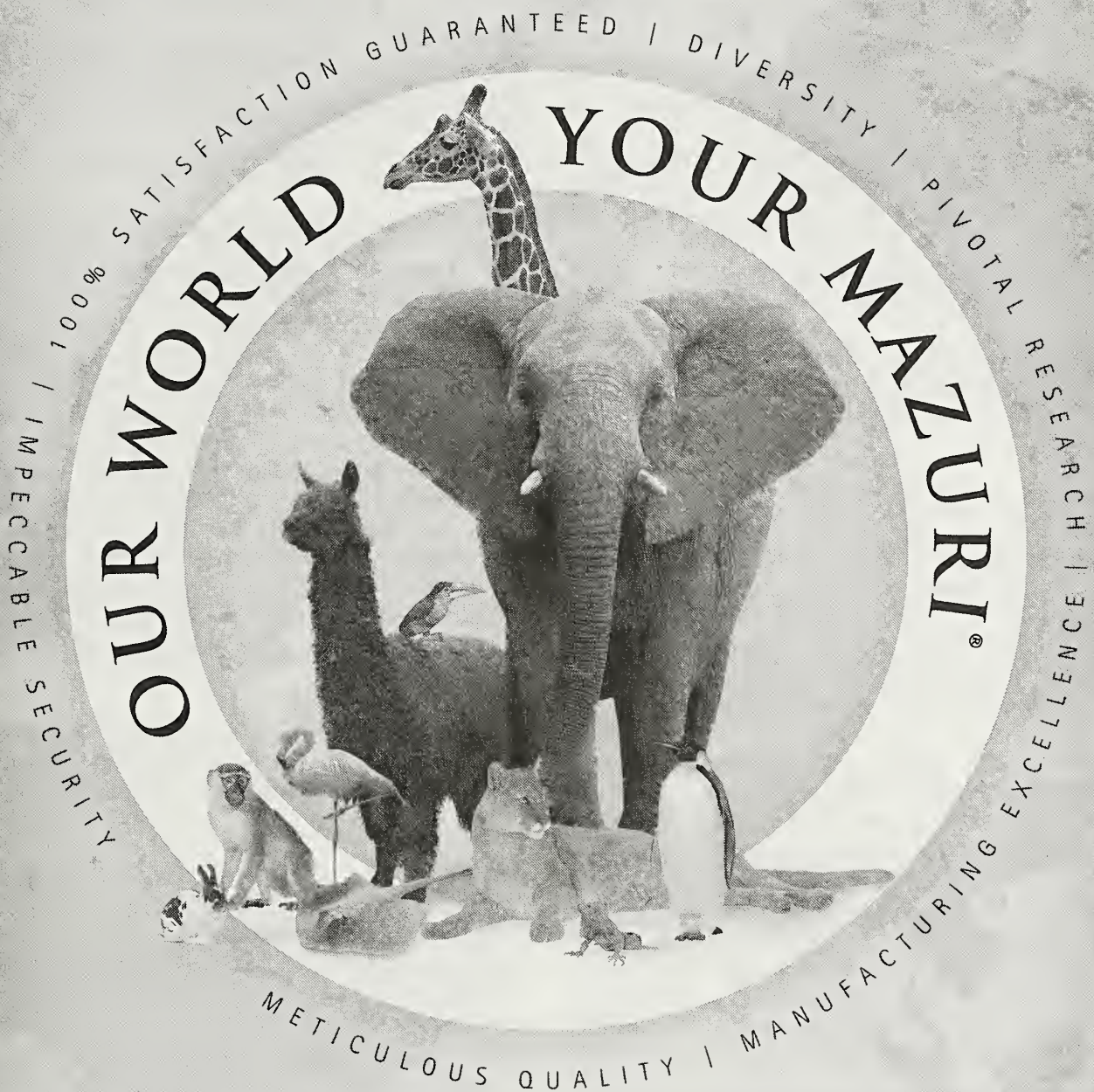
It was great to see everyone, and we hope you enjoyed your time in Philadelphia. We really enjoyed being your hosts, and hope to see you at future AAZK Conferences!

Best wishes to the San Diego Chapter, conference hosts for 2011. We know it will be an amazing conference, and we're looking forward to being there!

~ Catherine Vine and Amy Ivins
Conference 2010 Co-Chairs



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Coming Events

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October 14-15, 2010 - *Passerine Workshop* - Hosted by Zoo Atlanta, Atlanta, GA. The intent of this workshop is to increase knowledge for keepers/newer managers on basic husbandry, breeding, and daily management of various passerine species and sharing of information between institutions. Please contact Sprina Liu, sliu@zooatlanta.org, for more information.

October 14-20, 2010 - 30th Annual AZVT Conference. The Association of Zoo Veterinary Technicians will meet at the Los Angeles Zoo in Los Angeles, CA. If you would like more information please visit www.azvt.org or contact Peter Flowers @ zootekkie@gmail.com or call (323) 644-6051.

October 17-21, 2010 - 65th Annual Conference of WAZA. To be held in Cologne, Germany. For further information see <http://www.waza.org/en/site/home>

October 18-21, 2010 - *Seeing the Zoo the Way Animals Do* - Hosted by the Detroit Zoological Society, Detroit, MI. A workshop for animal care staff on improving animal welfare presented by the Center for Zoo Animal Welfare. For information contact: Elizabeth Arbaugh, Animal Welfare Manager, Detroit Zoological Society - Tel: 248-398-0903 x3643 E-mail: Elizabeth@dzs.org

October 19-23, 2010 - 20th International Zoo Educators' (IZE) Biennial Conference Hosted by Disney's Animal Kingdom, Florida, USA. For more information, please visit <http://www.izea.net/>

November 10-13, 2010 - The 6th Annual Zoological Association of America Conference - In Lafayette, LA. Information and registration forms are available at www.zaa.org. For more information, contact Matt Oldenburg at (337) 837-6139 or MOldenburg@ZooOfAcadiana.org.

November 16-19, 2010 - 2010 Aquatic Zoo Animal Nutrition Workshop - To be held in Montreal, Canada. For further information go to <http://www.caza-narg.org/>

December 6-10, 2010 - Training and Enrichment Workshop for Zoo Animals - Oakland Zoo, Oakland, CA. For information contact Active Environments, Inc. at 805-737-3700 or email Gail Laule at moonshadowe@earthlink.net or Margaret Roussier at margaret@oaklandzoo.org

February 16-19, 2011 - 19th Annual Conference International Association of Avian Trainers and Educators ~ "Pittsburgh 2011: Innovation and Inspiration" Hosted by National Aviary in Pittsburgh, PA USA. Papers, posters, site visits, vendors and workshops. Topics will include avian behavior, training, husbandry, conservation, education, enrichment and show presentation/production. For more information about the conference visit www.IAATE.org

March 2-4, 2011 - Association of Professional Wildlife Educators. To be held at the Frank Buck Zoo, Gainesville, Texas. Watch <http://www.apwe.org/> for details as they become available.

March 8-11, 2011 - Zoos and Aquariums Committing to Conservation. Hosted by the Woodland Park Zoo, at Sheraton Seattle Hotel, Seattle, WA, USA. Icebreaker planned for evening of March 7th. Registration now open at www.zoo.org/zacc

March 19-24, 2011 - Save the Date! The 2011 AZA Ungulate TAG Midyear Meetings are being planned in conjunction with the AZA Midyear workshop in Chattanooga, TN. The exact dates of the Ungulate TAG meetings will be determined soon. This year the meetings will include midyear working meetings for the following AZA TAGS: Antelope and Giraffe, Equid, Cervid, Caprid, Wild Pig and Peccary and the Cattle TAG, as well as the Annual Ungulate TAG Research Symposium. AZA has announced that the registration rates will remain the same as the rates in 2009 and the Conference Hotel will be the Chattanooga Marriott with conference rates of \$135/night. Contact Martha Fischer at fischer@stlzoo.org for more information.

May 15-18, 2011 - 2011 Rhino Keeper Workshop. To be held at Fossil Rim Wildlife Center, Glen Rose, Texas. For further info contact: adam.felts@columbuszoo.org

August 8-14, 2012 - The World Congress of Herpetology - To be held in Vancouver, Canada. For more information, visit the local site at <http://wch2012vancouver.com/>

September 8-13, 2012 - AZA 2012 Annual Conference - Hosted by Phoenix Zoo, Phoenix, AZ. For more information see http://aza.org/ConfWork/AC_Intro/index.html

September 7-12, 2013 - AZA 2013 Annual Conference - To be hosted by the Kansas City Zoo, Kansas City, MO. For more information see http://aza.org/ConfWork/AC_Intro/index.html

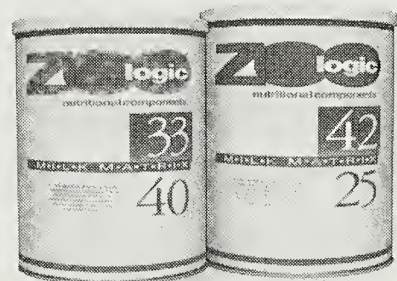
Upcoming AAZK National Conferences

2011 - San Diego, CA - August 24-28
see <http://sdaazk.com>

2012 - Syracuse, NY - September 23-27

For information on upcoming AAZK conferences, watch the AAZK website at www.aazk.org

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Debuting New AAZK Logo Clothing Product

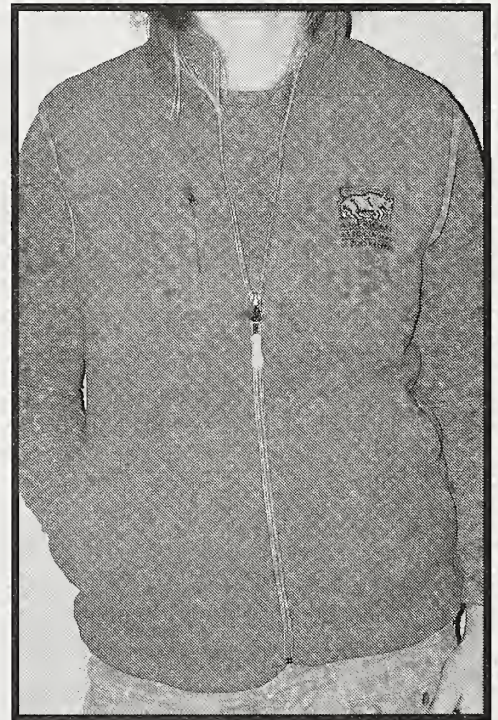
With the exception of duct tape, nothing is more versatile than a fleece vest. These vests are functional, comfortable and stylish. Use them as a layer to keep your body core warm or as an outer layer on cool spring or fall nights out. Men's and women's cut made of 80% recycled polyester with breast and front pockets, full zipper, collar, and detail trim.

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Very limited number of sizes, so place your order today!

See on AAZK website (www.aazk.org) under "SHOP" for color view of the vests, pricing, and to place your order.

Photos (clockwise): Women's Red Vest, Women's Cream Vest, and Men's Black Vest.



AAZK Announces New Members

New Professional Members

Amanda LaRose, **Turtle Back Zoo (NJ)**; Liana Kabrel, **Bergen County Zoological Park (NJ)**; Lacy Clifford, **Bronx Zoo (NY)**; Lindsay Jacks, **Smithsonian's National Zoological Park (DC)**; Amy Shepherd, **North Carolina Zoological Park (NC)**; Marc Veseskis, **Zoo World (FL)**; Tony Bright and David M. Bright, **Brights Zoo (TN)**; Rachel Shanks and Sandy K. Long, **Columbus Zoo & Aquarium (OH)**; Nicole M. Lenzo, **Washington Park Zoo (IN)**; Jennifer McDermott, **Ft. Wayne Zoo (IN)**; Marjorie Swain, **Kansas City Zoo (MO)**; Gregory Haus, **Omaha's Henry Doorly Zoo (NE)**; Melinda Polek, **Frank Buck Zoo (TX)**; Rebecca Muscher, **San Antonio Zoo (TX)**; Ashley Bowen, **Pueblo Zoo (CO)**; Charles Daugherty, **Happy Hollow Zoo (CA)**; Rebecca Smudzinski, **Honolulu Zoo (HI)**; and Paula Kerr, **Calgary Zoo (Alberta, Canada)**. *(We do not publish the names of new and/or renewing members who do not list their facility on their membership application/renewal There were three in August/September.)*

Renewing Contributing Members

Amy Roberts, Oak Park, IL

Gloria K. Khan, L.A. Zoo Volunteer
Camarillo, CA

Renewing Institutional Members

Prospect Park Wildlife Center
Brooklyn, NY
Denise McClean, Director

Naples Zoo, Naples, FL
David Tetzlaff, Director

Columbian Park Zoo
Lafayette, IN
Claudine Laufman, Director

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Susan Wahlgren, Director

Topeka Zoological Park
Topeka, KS
Brendan Wiley, Director

Happy Hollow Zoo, San Jose, CA
Greg Owens, Director


Renewing Commercial Members

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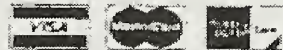
Invitation to Participate in Big Cat Survey

I am currently seeking any zoo staff who work with big cats to participate in a brief, anonymous, online questionnaire. The study is being conducted as part of my PhD research through the School of Psychology, Social Work, and Social Policy at the University of South Australia. My research involves an exploration of different handling and training methods for big cats in captivity and this project is focused on exploring the experience of zoo staff who currently work with these animals. I believe that such staff will be able to shed valuable light on the benefits and limitations of these practices. If you are presently working with big cats (including tigers, lions, cheetahs, jaguars, leopards, cougars, and/or snow leopards) and would like to participate, please go to the following link for more information and to complete the questionnaire: <http://www.unisanet.unisa.edu.au/TellUS2/SurveyForm.asp?ID=7395>. It should take about 15 minutes to complete. If you have any questions, or would like more information about the study, please feel free to contact me directly via email: Monika.Szokalski@unisa.edu.au< Thank you for your time and consideration.

~ Monika Szokalski, PhD Candidate, School of Psychology, Social Work, and Social Policy, University of South Australia - Monika.Szokalski@unisa.edu.au



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RATS AND MICE

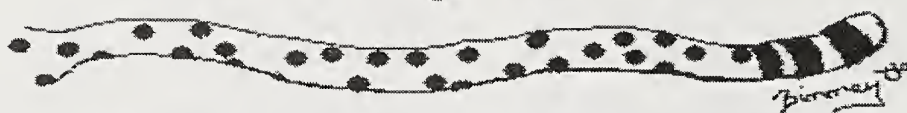
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The AAZK Behavioral Husbandry Committee Presents

Training Tales...



Where you can share your training experiences!

*Training Tales Editors – Jay Pratte, Zoo Atlanta; Kim Kezer, Zoo New England;
and Angela Binney, Disney's Animal Kingdom*

Meet Your Behavioral Husbandry Committee

This next year we will be intermittently sharing profiles of members of the AAZK Behavioral Husbandry Committee (BHC). Our first profile we would like to share with our readers is from Deana Walz, BHC Chairperson. Deana joined the AAZK Training Committee in 2006 and became chair the committee when it merged with the Enrichment Committee to form the BHC in 2008.



Deana Walz: Committee Chair

Deana is currently the Aviculturist at The Living Planet Aquarium in Sandy, Utah. She has been in the zoological field for close to 20 years. In her current position, she is responsible for the care and training of the Aquarium's Gentoo penguin colony and their education bird collection. Deana has worked with a variety of species from big cats to lemurs but has been working with birds over the past four years.

For Deana, her favorite part of the job is being able to work with such incredible animals on a daily basis and use the relationships she has made with the animals to help educate the Aquarium's visitors.

Through her years working with a variety of animals, Deana's biggest training challenge was met when she met "Nicholas", an African Spotted Leopard. He was increasing in age and was set to have his annual physical exam. She set out to train him to station to receive an injection. Nicholas was already acclimated to being touched and would often lay up against the cage mesh for daily scratches. Deana thought this was going to be relatively easy to start a training program with, however, she would soon see that it was going to be extremely challenging. She set out to start a training session, whistle, food and target it hand. As soon as food was offered as a reward, Deana was shocked to see how aggressive Nicholas had become. She had never seen him like this when food was present. He had always taken his food calmly when offered in large amounts. Deana tried different techniques to see if she could get Nicholas to calm down when giving smaller portions for training. She tried feeding him part of his diet in the morning before training, feeding him more food in his daily rations, and feeding him closer to training sessions. None of these feeding strategies worked.

Nicholas continued to be really calm during all times but when food was presented during feeding sessions. During an enrichment activity, Deana observed how he reacted to pearberry lotion that was placed on logs around his exhibit. He rubbed all over it and continued to be extremely calm. Deana is known for thinking outside of the box and decided to try to use the lotion as a reinforcer. When Nicholas did something correct a small amount of lotion or body pray was placed on the floor.

He remained calm during the entire session. After a relatively short time period, Deana was able to train him to station, remain calm, and receive an injection. This may sound like a very unique reinforcement to use, but reminds us that we should spend time to get to know what makes a good reinforcer for our animals to get the ultimate results.

Deana's favorite training tip is to make sure you have a very consistent training program. Consistency will make or break a training program. Make sure everyone involved in your program is on the same page and the program will run smoothly.

What is your favorite training tip?

We want to hear your training stories – the good, the bad and the fabulous!

Please submit your "Training Tales" and experiences in operant conditioning to share with *Animal Keepers' Forum* readers. This opportunity provides a convenient outlet for you to exhibit your training challenges, methods and milestones with the AAZK member network. Please submit entries based on the following guidelines:

a) Submit a brief description of a training project at your zoo. These can be 500 words or less, in text or bullet points. Or it can be longer (up to 1000 words) if you wish to elaborate; however, short and simple descriptions with a few images are just as perfect. Details should include the following:

1. Define the training goal (what did you try to do and for what purpose?)
2. List important steps (How did you do it – include plans that changed along the way/ what worked and what didn't work)
3. Timeline used (how long did it take)
4. Tips you learned along the way

b) Include 1-2 digital photos that clearly depict the animal in the learning process or performing the desired goal (list source and photographer of each image). Photos should have a 300 dpi and be submitted as either jpgs or tifs.

c) Please Note: We do not mind reprinting material if it is particularly useful to our readers; however, we want to be sure to give proper credit to previously published material. If your entry is not a first time publication, please include publication information (Journal name, Volume, Issue, Pages) with your submission.

Please send entries or questions to: Jay Pratte at jpratte@zooatlanta.org (use Training Tales Entry as the subject). Happy training!

MOVING?

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AAZK Grant Report.....

For The World's Waterfowl - AAZK Professional Development Grant Report on Sylvan Heights Avian Husbandry & Management Program

By
Amy Slagoski, Senior Biologist
The Florida Aquarium, Tampa, Florida

“Whatever we do, things are going to get worse. The best we can hope for is that they will get worse less quickly than they would otherwise have done. Of course, there are lots of things we can do to help...” David Attenborough’s recent remarks regarding the state of our environment imply that we can make a difference by the work we do (Guardian, 2010). I recently completed a two-week internship in June at Sylvan Heights Waterfowl Breeding Center (SHWBC), made possible by the AAZK Professional Development Grant and The Florida Aquarium. Led by Mike Lubbock, the Avian Husbandry and Management Program at SHWBC is designed to bolster aviculture practices pertaining to waterfowl in hopes of creating a collaborative conservation effort.

Staff at the breeding center have dedicated their lives to improving waterfowl aviculture. Mike Lubbock is the Executive Director of Sylvan Heights Waterfowl Park and Eco-Center and Founder of Sylvan Heights Waterfowl Breeding Center. Nick Hill is the Curator of Aviculture at the breeding center. Lubbock established the breeding center in Scotland Neck, NC in 1989 with over 20 years of prior aviculture experience. He developed a passion for waterfowl at the Wildfowl Trust in Slimbridge, England working his way up from a volunteer to director. He has designed and developed successful waterfowl propagation centers and accomplished many first breedings. His pioneering efforts for collecting fertile eggs in the field are renowned. This has enabled wild populations to

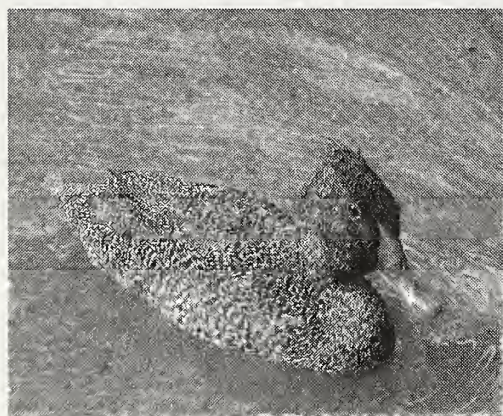


Fig. 9 Freckled Duck
(*Stictonetta naevosa*)

remain stable while introducing new bloodlines into captive populations for management of rare species, such as the Freckled Duck (*Stictonetta naevosa*), Pygmy Goose (*Nettapus species*), Australian Blue-billed Duck (*Oxyura australis*), Musk Duck (*Biziura lobata*), and Pink-eared Duck (*Malacorhynchus membranaceus*) [Fig. 9, Fig. 10]. Mike and his wife Ali have received the prestigious Jean DeLacour Avicultural Award and have been inducted into the International Wild Waterfowl Association Hall of Fame (Sylvan Heights Waterfowl Park [SHWP], 2010).

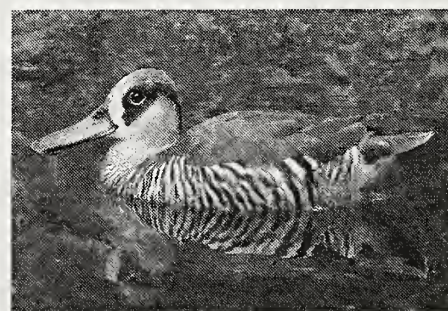


Fig. 10 Pink-eared Duck
(*Malacorhynchus membranaceus*)

Nick Hill has decades of experience in breeding and rearing birds, and worked as the Assistant Curator at Birdland Zoo Gardens, UK prior to Sylvan Heights. He has received the Southwick Memorial Award from the International Wild Waterfowl Association and first breeding awards for the Black Browed Albatross (*Thalassarche melanophris*) and Palm Cockatoo (*Probosciger aterrimus*) (SHWP, 2010). Hill does consulting for animal-related productions, and has trained Snow Geese (*Chen caerulescens*) for the BBC documentary “Flight of the Snow Geese” and King Penguins (*Aptenodytes patagonicus*) for Universal Studio’s “Batman Returns.” In addition, Hill has led expeditions to the Falkland Islands to collect penguin, seabird, and waterfowl eggs for captive research projects.

The Lubbock home is open to volunteers and interns interested in sharing their passion in Scotland Neck, NC. Internship programs vary in length from one week to three months with a focus on the following Anseriformes husbandry techniques: nutritional requirements, nesting habitat, egg handling and storage, incubation and hatching, rearing techniques, sexing, veterinary and aviary requirements. There are 170 species of waterfowl at the breeding center, 2500 birds, and approximately 1000 hatchlings reared each year; there are always eggs in the incubator and ducklings in the hatchery (SHWP, 2010). The hands-on husbandry courses are offered during the busiest time of the year for breeding, from April to July. The two-week course is just long enough to gain insight into the daily operations of a breeding center. All staff, volunteers, and interns take part in feeding the breeding pens, cleaning and feeding the little duckery, big duckery, and broody hens. In between the daily routines, qualified staff instruct on the important details of breeding, incubating, and rearing waterfowl.

A variety of nest boxes are used extensively at SHWBC to provide ideal nesting opportunities [Fig. 1, Fig. 2]. Breeding pens vary in design, specifically for one pair or for several waterfowl pairs depending on what works best for the particular species. Bonded pairs are preferred for breeding success, and are determined in the off season by observations of the birds' behavior in a group setting. Pairs are placed in breeding pens during their natural breeding season. Staff closely monitors the breeding pens, keeping notes on which nests are active.

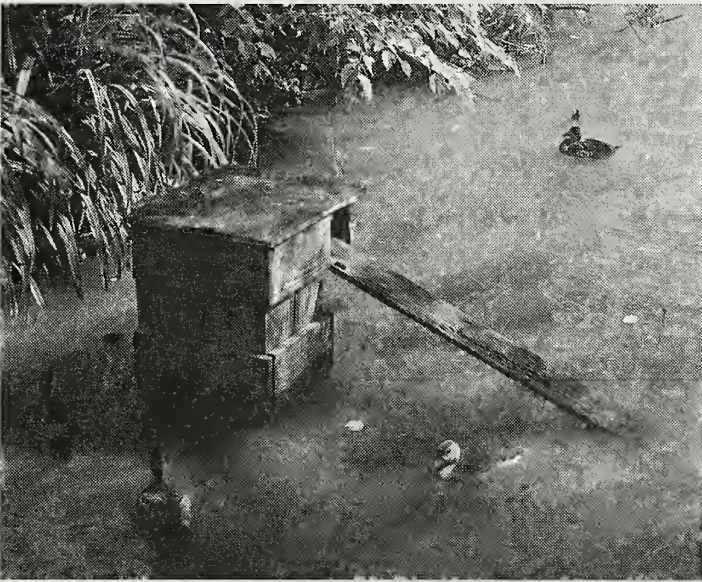


Fig. 1 Nest box in mixed-species breeding pen



Fig. 2 Slated nest box

Parent incubation is preferred, but if the birds are not good incubators and/or the weather conditions are not ideal (too humid or too wet), the eggs are pulled. Broody hens are then used to sit on the eggs for up to 18 days with daily monitoring of the eggs while the hens are off the nest to eat [Fig. 3, Fig. 4]. Different sized hens are used for different sized eggs but if the eggs are too large for the broody to turn, staff will assist in turning while the hen is off the nest. The best hens are selected for the job from an offsite hen house and are considered the heart of the breeding operation. The hen house is offsite for optimal biosecurity.

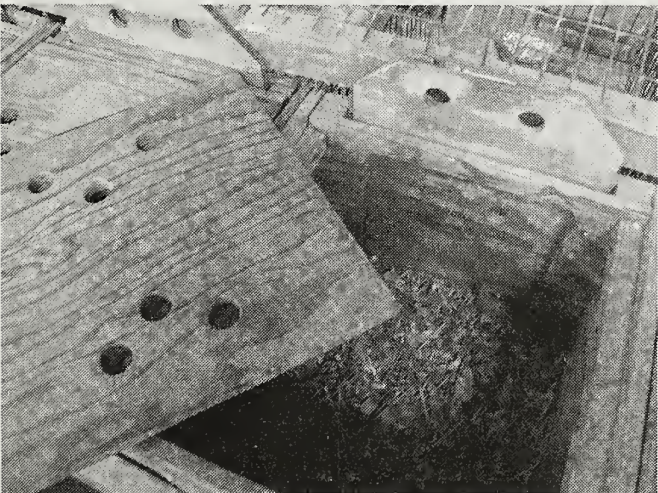


Fig. 3 Broody box designed by Mike Lubbock

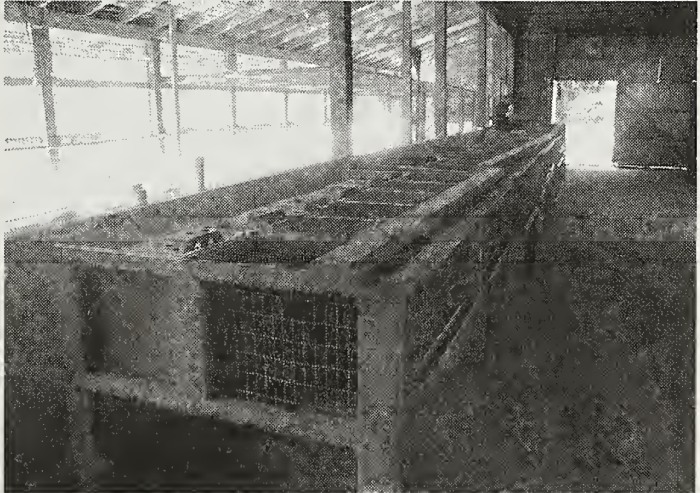


Fig. 4 Row of broody boxes

For the last stage of development, the eggs are placed in an artificial incubator. The humidity in the whole room is controlled (rather than just the humidity in the incubator) for best results. Eggs are candled daily to monitor their progress. When the chicks start to pip into air space, the eggs are placed in a hatcher. Once the chick breaks open the shell, they are kept in a heater/blower or “fluffer upper” unit until they are dry and warm.

From here, the chicks are moved to the little duckery, into a dry brooder with a heat lamp and source of trickling water to ensure a continuous fresh supply [Fig. 5, Fig. 6]. Grated hard-boiled egg is sprinkled over the 19% protein crumble diet for the first few days to attract the chicks to the feeding dish. Diced greens are added to the diets of goslings and sea duck starter is added to the diets of fish-eating birds. Birds are kept together according to age and size. It is important not to overcrowd, to have good air circulation, and a constant supply of clean water for the health of the birds. About a week later, the dry brooder is transformed into a wet brooder with a gradual sloping floor. The depth of the water is controlled by the length of a standpipe. Birds are sexed, pinioned (if need be), and recorded at this age. Goslings are taken outside for a few hours a day depending on the heat. Outside covered enclosures are portable so grazing areas can be rotated daily for fresh grass to prevent gut parasites [Fig. 7].

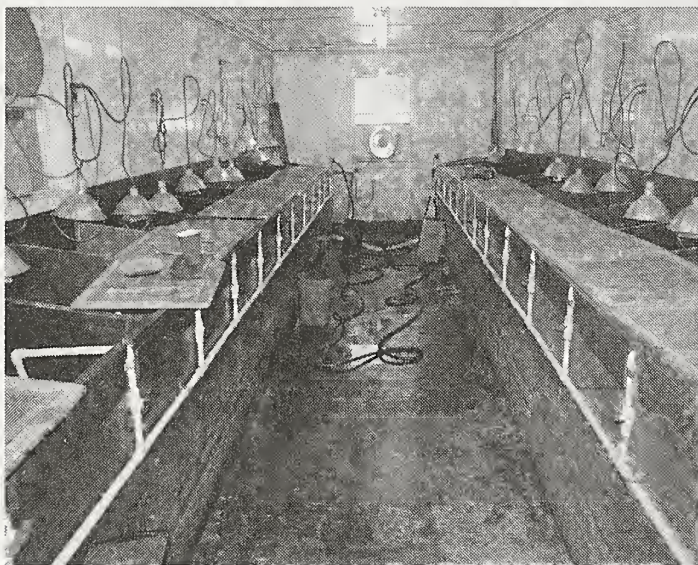


Fig. 5 Cleaning the little duckery

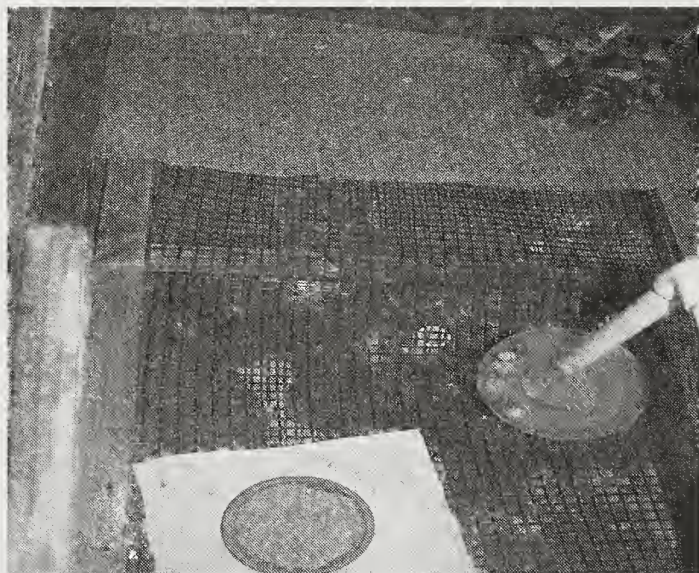


Fig. 6 Dry brooder set-up



Fig. 7 Gosling grazing pens

About the third week, the chicks graduate to the large duckery [Fig. 8]. These runs provide more room and hold more water, with access to a shaded pool outside through a sliding door. Space heaters and heat lamps or fans are used depending on the weather. The crumble diet is switched to a 16% protein and the birds are slowly introduced to pellet. If there is too much protein in the diet and the chick grows too fast, growth deformities referred to as angel wing and bandy legs can develop. The chicks are banded and stay in the big duckery until they are well-feathered. From here they are moved into adolescent pens with large ponds until they are transferred to another facility or

moved into the adult collection at Sylvan Heights. What works best for breeding and rearing is based on the staff's impressive experience and insight.

To learn waterfowl aviculture practices first-hand from the Lubbocks and Hill is priceless. Not only do you gain an understanding of what goes into a breeding operation; you also gain an appreciation

for the efforts of waterfowl conservation. The purpose of the breeding center is to provide zoos, aquariums, and private collectors with waterfowl in hopes of creating a collaborative effort of sustainability. The Lubbocks have done research with the International Wild Waterfowl Association to gather information on the current captive populations of waterfowl through surveys (SHWP, 2010). Unfortunately, they have discovered that birds once numerous in collections are declining, leaving uncertainty to sustainable captive populations. Some of these species are on the verge of extinction in the wild, despite the creation of managed preserves. Sylvan Heights

keeps constant watch on the status of threatened waterfowl and believes that captive breeding is the best plan in safe guarding species such as the White-winged Wood Duck (*Cairina scutulata*), Meller's Duck (*Anas melleri*), Hawaiian Duck (*Anas wyvilliana*), Swan Goose (*Anser cygnoides*), and the Madagascar Teal (*Anas bernieri*) (SHWP, 2010) [Fig. 11]. In addition to these fragile species, there are others that are more numerous in the wild, but a lack of interest in captive populations and breeding creates problems for supporting genetic diversity. Due to rapid habitat destruction, waterfowl species are increasingly becoming threatened. By focusing on captive breeding, Sylvan Heights has also been successful with increasing captive populations of the Cape Teal (*Anas capensis*),



Fig. 11 White-winged Wood Ducks (*Cairina scutulata*)

Birds in Captivity in Toronto titled The State of Captive Waterfowl (SHWP, 2010). This paper is a must read to gain a better understanding on what Lubbock feels is needed to protect the future of the world's waterfowl populations. Sylvan Heights has collaborated with several agencies to accomplish this goal: The National Zoo Conservation and Research Center and Patuxent Wildlife Research Center on duck sperm freezing and waterfowl DNA analysis; North Carolina State University College of Veterinary Medicine on aviculture and avian disease; Florida State University on blood sexing and waterfowl lineages with Dr. Siwo; Fort Worth Zoo on Masked Duck and West Indian Whistling-Duck (*Dendrocygna arborea*) population analysis; Hope Zoo on a stiff-tailed duck breeding program; University of North Carolina on Duck Hepatitis B Virus with Dr. Newbold; and the United States Fish & Wildlife Service on American Wood Duck (*Aix sponsa*) sensitivities to toxins in the Roanoke River (SHWP, 2010).

All of the Lubbock's efforts towards waterfowl breeding, conservation, and education have made them very popular. Ali stays extremely busy coordinating tours, volunteers, interns, shipments, acquisitions, and park operations. At the end of the day, she cooks a delicious meal for a table full of guests while interns get the opportunity to pick Mike's brain regarding the day's work and lessons he

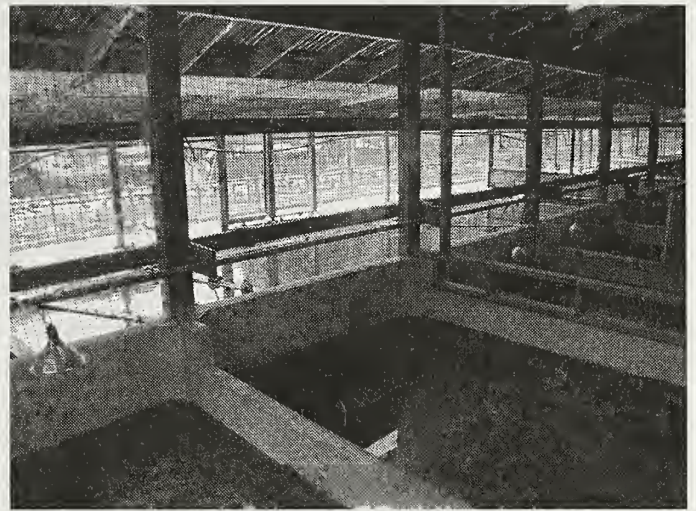


Fig. 8 Big duckery

East Indian Gray Teal (*Anas gracilis gibberifrons*), Southern Pochard (*Netta erythrophthalma*) and numerous others. Currently, the Lubbocks and staff are working on the following conservation projects at SHWBC: Brazilian Merganser (*Mergus octosetaceus*) Recovery Project, Orinoco Goose (*Neochen jubatus*) Nestbox Project, and the Hawaiian Duck Breeding Program (SHWP, 2010).

Mike Lubbock has a strong belief that public and private groups must work together to conserve waterfowl. In 2007, he presented a paper at the IV International Symposium on Breeding

wrote in the handy Avian Husbandry & Management Manual. There is no other place in the world as unique; where you are so immersed in waterfowl that whatever your focus, the learning opportunities are endless. The only dilemma I had regarding the two-week internship was that I wished I could have stayed longer. Without the efforts of Mike and Ali, the current status of waterfowl populations would definitely be worsening more quickly than we could hope for otherwise. Their work is admirable, and an example that there are lots of things we can do to help.

Acknowledgments

Many thanks to the AAZK Grant Committee and The Florida Aquarium for financial support. Special thanks to Ali and Mike Lubbock and Nick Hill for their hospitality, compassion for waterfowl conservation, and dedication to aviculture education. Thanks to Paul Anderson for grant research and editing support. Thanks to Jenn Moffatt for editing and professional development support. Thank you to Ryan Czaja and the great staff at The Florida Aquarium for coverage while I was in North Carolina.

(All photos by the Author)

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I want to welcome all AAZK Chapters to the 2nd Annual "Trees for You and Me" AAZK Chapter Challenge that will run from 1 September 2010 - 1 March 2011. This year the link to "Trees" will be on Polar Bears International (PBI) website. We will be helping to build the Polar Bear Forest in Wisconsin with the help of the Wisconsin Department of Natural Resources (WDNR). This year for each \$1 donated three trees will be planted in the Polar Bear Forest. The winning AAZK Chapter will again have a tree planted in their zoo or community thanks to PBI along with a plaque. "Trees" is a true collaboration between PBI, WDNR, and AAZK to plant trees, reduce CO₂ and help polar bears!

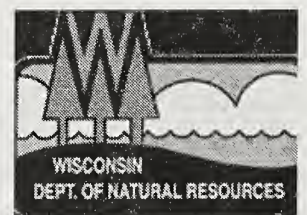
PBI's link for "Trees for You and Me" to donate is below; don't forget to find your AAZK Chapter on the scroll and click to win.

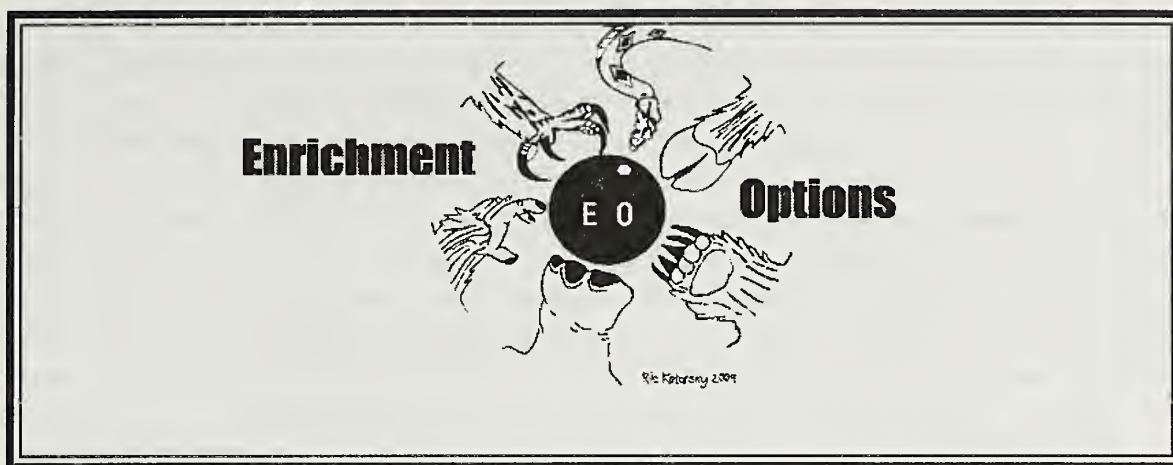
<http://www.polarbearsinternational.org/programs/trees-you-and-me-model-nation>

AAZK's link to AAZK/PBI and reforestation

<http://aazk.org/aazk-and-polar-bears-international/>

Any questions or comments contact christy.mazrimas-ott@aazk.org





EO Editors -

Julie Hartell-DeNardo, Oakland Zoo and Ric Kotarsky, Tulsa Zoo & Living Museum

Tapir Enrichment: Deciding “when” is just as important as deciding “what”

*By Sheila Wojciechowski, Senior Keeper, Primate Department
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Introduction

The Tropic World South America exhibit at Brookfield Zoo is a mixed-species, naturalistic rainforest exhibit which contains 2.6 spider monkeys (*Ateles geoffroyi*), 1.3 capuchin monkeys (*Cebus apella*), 0.1 giant anteater (*Mirmecophaga tridactyla*), and 0.1 lowland tapir (*Tapirus terrestris*). This study focused on creating the most effective enrichment rotation for Jutal, our 26-year-old Brazilian lowland tapir. Keepers began focusing on creating an enrichment rotation for her in 2008. Initially this involved developing a list of potential enrichment ideas from published accounts of tapir enrichment at other zoos (Sharpe 1997, Zenzinger 2003, and Hobbelink). We also visited the hoofstock and pachyderm departments of our zoo to research enrichment being provided to similar species. In addition, we relied on our knowledge of our tapir’s behavior and brainstormed other things she might utilize. In the end, we had developed a list long enough to provide enrichment twice per day (Figure 1). This was the easy part.

Next came testing each of the enrichment items to see what she would utilize. This was primarily done by casual observations. Keepers made note of what she was and was not utilizing in her holding area, while a volunteer noted what she was and was not utilizing on exhibit. While we hypothesized that an animal species which is more olfactory oriented would react dramatically to different scents, this proved not to be the case. Since this tapir seems to enjoy a daily rub-down by keepers during daily visually examinations we attempted tactile enrichment ideas. Keepers never observed Jutal to utilize these items even after months of trying them. Keepers did not detect any change in Jutal’s behavior with novel sound enrichment. She did initially respond to an audio tape of vocalizations made by another tapir, but this seemed to subside quickly. Unfortunately we were unable to modify her exhibit use through these environmental changes. Perhaps, it is difficult to get a geriatric animal to change her ways. However, from our brainstorm list, we did identify seven items that can be thrown into the tapir pool during the middle of the day, which Jutal would consistently utilize (Figure 2). Therefore, to be more effective for keepers and Jutal, we made the decision to simplify our enrichment rotation to once per day.

Now that we decided “what” enrichment to provide to Jutal, we had to decide “when” we should provide it. Initially we decided to provide her with enrichment at 1530 hrs because this is the approximate time she woke up daily. We then began a formal study looking at the time of day the enrichment item was provided with the goal of maximizing the amount of time the tapir was active during public hours.

Methods

Behavioral data recording if Jutal was “inactive” or “active” were collected by a volunteer at 30-minute intervals from 1000 hrs until 1700 hrs every Saturday and Sunday from May 2008 until August 2009. “Inactive” was defined as being in a lying position; while “active” was defined as standing on all four feet (whether locomoting or stationary) or swimming in her pool. Between the time points the volunteer continued to observe constantly and recorded the exact time Jutal woke up and got into a standing position each day. Prior to the start of the enrichment rotation, eight months of baseline data were collected on Jutal without any enrichment provided. The experimental portion of the study consisted of providing the same enrichment items at different times of the day. We selected four different time periods (1300, 1400, 1445, and 1530 hrs) to study. Each time period was performed for seven weeks, with enrichment provided daily at the specific time and data collected on weekends. All seven of the enrichment items were provided equally during each of the time periods on data collection days.

Results

The time Jutal awoke daily during the control phase (no enrichment) and each of the experimental phases was averaged. Results are displayed in Figure 3. When enrichment was provided, Jutal did awake earlier. However, there was a significant difference in the experimental conditions with enrichment being provided at 1400 or 1445 hrs resulting in the desired results of waking up the earliest. Throwing enrichment at this time of day resulted in nearly an hour increase in the time she awoke.

Figure 4 displays the percent of time Jutal was active during public viewing hours. Again, significant differences can be seen in each of the experimental conditions. Jutal was most active when enrichment was thrown at 1400 or 1445 hrs, with no significant difference in these two conditions.

Discussion

While keepers often put a lot of time into selecting “what” enrichment items to provide to an animal, this study shows that “when” enrichment is provided can be as important. It also shows that keepers observing briefly when enrichment is provided may not be the most accurate way to evaluate if goals of an enrichment program are being met. Our original idea (and easiest for us to see results) was to provide enrichment during her normal active period. When keepers provided enrichment to Jutal at 1530 hrs, she was often awake already. (The average time she woke up at this condition was 1522 hrs – prior to enrichment being thrown). Because she was already awake, keepers would see her using the item and it was easy to believe this was very effective. However, in regards to the goal of increasing the amount of time she was active, we were not being effective. The percent of time she was active remained exactly the same as when we were not providing her enrichment at all.

Moving enrichment a little bit earlier proved to be more effective in reaching our goal, even if keepers were unable to detect this via casual observation. As busy keepers, we might only be able to observe for 10 minutes. If Jutal does not awake during this time, it is easy to assume the enrichment is not effective. However, since tapirs are slow-moving animals, it may take them longer than 10 minutes to actually engage with the enrichment item, but this does not mean that they do not use it at all or that it is not affecting their behavior. When we provided the enrichment item at 1400 or 1445 hrs, Jutal woke up on average at 1500 hrs. Even though it took her 15 or 60 minutes to get to the item, her activity level was significantly increased. She was becoming active nearly one hour earlier than she would on days when no enrichment was provided. This is stimulating for her and also equates to many more visitors to our exhibit being able to see an active animal. While this may be difficult for a keeper who only has time to briefly observe to detect, it is making a significant impact.

Finally, providing enrichment even earlier than 1400 hrs proved not only ineffective, but also worked against our goal. Jutal awoke only slightly earlier when enrichment was provided at 1300 hrs as compared to no enrichment being provided at all. This was actually 18 minutes later than when enrichment was being thrown at 1530 hrs and 40 minutes later than when enrichment was being thrown at 1400 or 1445 hrs. Most surprising was a documented decrease in activity level with the 1300 hrs enrichment toss time relative to the baseline (no enrichment) condition. The reasons for this decrease in activity level cannot be completely understood but we must always keep in mind the natural history of an animal when trying to create the best husbandry practices in captivity. We

should not expect an animal species that normally sleeps during the day to all of a sudden be active during the day. With that in mind it may not be as surprising that an elderly animal that has slept until 1530 hrs for years will choose to awaken a little earlier with some positive motivation, but will not choose to wake up 2 ½ hours earlier than she is used to.

While tapirs are generally considered to be nocturnal animals (Bodmer and Brooks, 1997), there is some variation in the amount of time tapirs are active during the day in the wild and in captivity. At one location in Argentina, tapirs are active during the day (Bodmer and Brooks, 1997). In captivity, tapirs have been reported to alternate between active and resting periods throughout the day (Sharpe, 1997). It is possible that our tapir's activity pattern may change gradually over time. For now, keepers continue to provide the enrichment throw between 1400 and 1445 hrs daily. In the future, if she adapts to this time, it is possible we could try to gradually move it a little earlier. But we will continue to monitor her activity level and adjust our timing only if it will meet her behavioral needs.

In conclusion, this study shows that while selecting “what” enrichment items to provide to your animals is very important, deciding “when” to provide those enrichment items can be equally as important in meeting your goals and providing the best welfare to your animals.

Acknowledgments: It takes a very special volunteer to observe an animal for long periods of time each day for over a year, especially one that is not naturally active during that time. The keepers and Jutal are grateful we have Lynn Weis to help us create the best husbandry practices for our animals and maximize their welfare.

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1. Leafy food items provided in the middle of the day.
 2. Vegetables provided in the middle of the day.
 3. Novel food item, not part of her regular diet.
 4. Scent enrichment items (spices or scents from the pachyderm house).
 5. Scratching post
 6. Keeper providing bath
 7. Heater or fan
 8. Novel sounds (radio, nature CD, or taped vocalizations of other pachyderms)
 9. Hose spraying into her pool
 10. Change level of water in her pool.
 11. Re-arrange feeding stations.
 12. Rotate plastic toys on exhibit.
 13. Changes substrates in her holding area (e.g. grass hay, shavings, or woodwool)
 14. Alfalfa on exhibit
 15. Natural log
 16. Browse
 17. Training session by keeper.

Figure 1: Brainstorm list of tapir enrichment ideas

1. Frozen fruit
 2. 20% of diet items provided in the feeder
 3. Alfalfa
 4. Leafy diet items
 5. Natural log
 6. Water spray
 7. Peanut butter smeared on a plastic toy.

Figure 2: Seven enrichment items provided throughout experiment

	Average time Jutal woke up
No enrichment	1551 hrs
Enrichment provided at 1300 hrs	1540 hrs
Enrichment provided at 1400 hrs	1500 hrs
Enrichment provided at 1445 hrs	1500 hrs
Enrichment provided at 1530 hrs	1522 hrs

Figure 3: How changing the time enrichment was provided affected the time Jutal woke up.

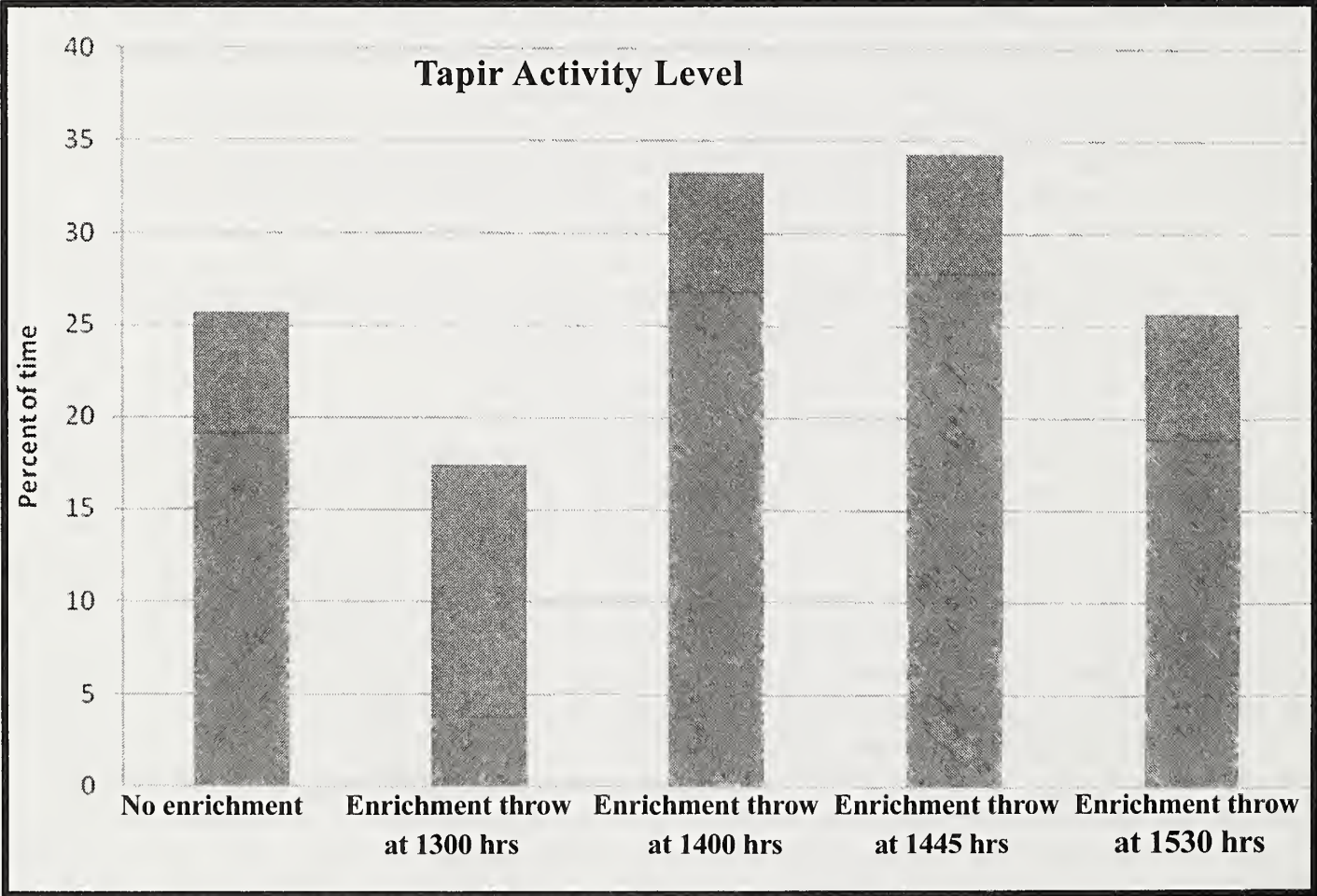


Figure 4: How changing the enrichment timing affected the percent of time Jutal was active.



Jutul, tapir, interacting with one of her plastic items smeared with peanut butter



Jutul, tapir, utilizing water sprayed from a hose onto her exhibit.

(Photos by Jim Schultz, Chicago Zoological Society)

(You are encouraged to submit material for the Enrichment Options column. Share how enrichment has or has not worked with the species in your care. Photos of the animals using the enrichment are especially good. Articles may be sent electronically to akfeditor@zk.kscoxmail.com. Articles should be sent in MS Word only. Photos should be sent as individual jpg or tif files attached to the email. Desired dpi for photos is 300. Be sure to include suggested captions and proper photo credit for each photo submitted. If you have questions contact the AKF Editor at the email given above.)

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“Bowling For Rhinos Update 2010”

We had a great AAZK Conference in Philadelphia but I couldn't announce the Bowling For Rhino trip winners as the deadline to turn in money is Sept. 1st. The 2010 top 10 money raisers in the U.S. and Canada are:

1. Dani Cremona of Los Angeles AAZK with \$30,000 (wins two-week trip to Lewa).
2. Melissa Kesler of the Oklahoma City AAZK with \$15,000 (wins two-week trip to Lewa).
3. Reanna Streater - Dallas - \$10,063
4. Tracy Unger - Detroit - \$8,600
5. Emily Blanchard - Tulsa - \$8,332
6. Debbie Burch - S. Florida - \$7,000
7. Linda Stark - Indianapolis - \$3,744
8. Brooke Stowell - Battle Creek - \$3,728
9. Patty Pearthree - North Carolina - \$2,422
10. Bob Benjun - Minnesota - \$996



The top three money raising AAZK Chapters were:

1. Los Angeles - \$30,000
2. Oklahoma City - \$15,000
3. Dallas - \$11,564

This was only LA's second event and they have been the top money raiser for the past two years. According to LA AAZK, "Along with raising thousands of dollars for the event, Dani Cremona also played a huge role in organizing the event. Dani was responsible for obtaining most of the sponsors for the event, building long-term fundraising relationships, ...obtained most of the Silent Auction items (Southwest Airlines, Renaissance Hollywood Hotel & Spa, Los Angeles Kings, etc)...sold raffle tickets and emceed the entire four-hour event. This all during a tough year for LA Zoo with a slew of early retirements, hiring freeze, mandatory furloughs, etc."

"Melissa Kesler has been busy all year raising BFR funds for OKC AAZK with Penny Wars, Change Drives, Car Washes, Bracelet/Tattoo Sales, Bake-offs, T-shirt Sales, Raffle & Candy sales, donation request letters, bowling event and Zoo Friends".

It will be wonderful for Dani and Melissa to see first-hand how all their hard work benefits Lewa.

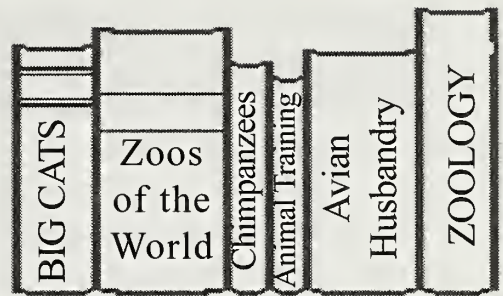
If your Chapter has not yet turned in funds from the 2010 event, it is not too late. Please do so ASAP. We raised \$256,000 in 2009 and it looks like it will be a stretch to reach \$300,000 for 2010. If your Chapter is able to make a "year-end donation" toward the 2010 BFR event, please send funds by December 1st to: Patty Pearthree, c/o BFR, 318 Montibello Dr., Cary, NC 27513. Make checks payable to: "AAZK, Inc-BFR"

Our #1 BFR goal for 2011 is to have **all** 80 AAZK Chapters participate in "Bowling For Rhinos". Any type of fundraiser is welcome. Some Chapters have been very successful with "Wii bowling", "Run/Race For Rhinos", "Rummage For Rhinos", "Rock n For Rhinos", "Sailing For Rhinos"...and the list goes on. All donations, of course, are always welcome and count as participation. Remember, it takes about five consecutive years for a fundraising event to catch on in your community so it is important to keep rolling with BFR in order to be successful.

Our #2 BFR Goal is to raise \$400,000 in 2011. If we increase the overall size of the "conservation pie" each of the organizations we support will receive a larger amount of money. Now is the time to begin planning your event for 2011. It's time to form a committee for your event, select a date for your event and decide what kind of event/events you will plan. If you are able to do so, try to pick an early date in May. The more BFR events we can have around the country in early May, the more PR we are likely to receive. Once you select your date, begin advertising to the public to increase attendance at your event. Please see <http://aazkbfr.org> for helpful hints on holding a successful event.

Please let me know the date of your event and your contact information asap so I can update the website. All three organizations that receive BFR funding (IRF, Lewa and Action For Cheetah) would like to help you "grow" your event but we need this information to do so. If you plan to make a donation rather than hold an event, please let me know. The sooner we know your event date, the better our chances of helping to "grow" your event. Please contact Patty Pearthree: ppear3@pear3.org

Book Reviews



Wild Mammals in Captivity: Principles & Techniques for Zoo Management, 2nd Edition

2010 - Edited by Devra G. Kleiman, Katerina V. Thompson and Charlotte Kirk Baer

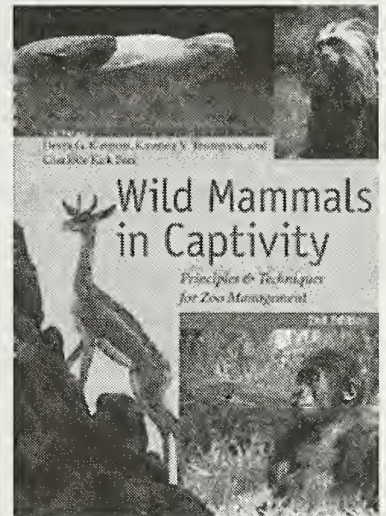
University of Chicago Press, 1427 E. 60th St., Chicago, IL 60637

ISBN13: 9780226440095 ISBN10: 0226440095

Hardbound, 548 pgs., 100 halftones, 39 line drawings, 67 tables

Price: \$85.00 US; £55 British Pounds

Zoos, aquaria, and wildlife parks are vital centers of animal conservation and management. For nearly 15 years, these institutions have relied on *Wild Mammals in Captivity* (1997) as the essential reference for their work. Now the book reemerges in a completely updated second edition. *Wild Mammals in Captivity* (2010) presents the most current thinking and practice in the care and management of wild mammals in zoos and other institutions. In one comprehensive volume, the editors have gathered the most current information from studies of animal behavior; advances in captive breeding; research in physiology, genetics, and nutrition; and new thinking in animal management and welfare.



In this edition, more than three-quarters of the text is new, and information from more than 75 contributors is thoroughly updated. Featuring contributions from dozens of internationally renowned experts, this book is a professional reference of immense practical value, surveying every significant scientific, technical, and management issue. The standard text for all courses in zoo biology, *Wild Mammals in Captivity* will, in its new incarnation, will continue to be used by zoo managers, animal caretakers, researchers, and anyone with an interest in how to manage animals in captive conditions.

New for this Second Edition:

- Information on evaluation of captive facilities and accreditation standards
- Emphasis on the importance of outreach and zoo education programs
- Focus on animal enrichment and training
- Newly added chapter on marine mammals and expanded horticulture coverage
- Emphasis on application rather than theory
- More international contributors and a broader global scope

The book is divided into seven parts with topic headings of: Ethics and Animal Welfare Standards, Basic Mammal Management, Nutrition, Exhibitory, Conservation and Research, Behavior, and Reproduction. The extraordinary Appendices include Standard Methods for Measuring Mammals, Identification and Marking Techniques, Records, Studbooks and Regional Zoo Associations, as well as an annotated Bibliography of Books, Journals and Websites on Captive Management. Articles in this volume may be accessed by Author, Subject or Taxonomic indices.

This extraordinary book is an essential resource for administrators, keepers, veterinarians, and everyone who works directly with mammals or is concerned generally with their management and conservation.

Protocol for Training Select Individuals from a Large Group of Socially Housed Anubis Baboons (*Papio Anubis*)

By

Rebecca Bearman, Lead Keeper/Birds & Program Animals
Zoo Atlanta, Atlanta, GA

Introduction

Animal welfare has been a hot topic for as long as animals have been under human care. In 1900, the Cruelty to Wild Animals Act outlawed tormenting zoo animals, shortly before Carl Hagenbeck chose positive reinforcement training (PRT) over traditional training methods to manage his animal collection (Mench and Kreger, 1997). Today, we know PRT is a successful tool for improving the welfare of animals in captivity.

PRT provides tools to: improve husbandry through cooperation between keeper and animal; improve social management through increased affiliation and decreased aggression (Prescott and Buchanan-Smith, 2003); increase overall activity (Waitt, Buchanan-Smith & Morris, 2002); desensitize animals to potentially stressful environmental factors; and increase accessibility (Laule and Whittaker, 2007).

PRT has been shown to decrease stress (Basset, Buchanan-Smith, McKinley, et. al., 2003) and stereotypical behaviors (Bloomsmith, Marr & Maple, 2007), while increasing communication and trust between caretakers and animals, enhancing overall well-being of captive animals, and assisting in husbandry, veterinary, and research procedures (Lambeth, Hau, Perlman, et. al., 2006). According to Lambeth et al (2006), staff also benefit from decreased stress as animals learn to cooperate. PRT training sessions allow zoo goers to see animals up close, performing natural behaviors on cue; ask questions after training sessions; and enjoy increased learning opportunities (Anderson, Kelling, Pressley-Keough, et al., 2003).

Although benefits of PRT have been clearly demonstrated, there are circumstances in which caregivers choose not to employ it. Training animals in groups can lead to aggression between cage mates; or less dominant animals may refuse food from a trainer in the presence of a more dominant animal (personal observation). To eliminate the need to separate animals for training, this study addressed methods for training select individuals housed within large social groups. Through trial and error, an effective protocol for training individual animals within a larger group was developed.

Methods

Location and Study Animals

The 49.56.20 Anubis baboons (*Papio anubis*) involved in this study were housed in a two-acre enclosure at Six Flags Wild Safari in Jackson, New Jersey, USA. All males, with one exception, were castrated. While Wild Safari is a drive-through park, the baboon habitat is closed off from the road. Six males were initially selected to participate in the study over seven days of *ad libitum* observations of the entire group (Altmann, 1974); an additional individual that regularly approached during training sessions was added (see Training Methods).

The training area was along the exterior fence in an employee-only area. Participant baboons were selected based on perceived dominance level (mid- to high-ranking), curiosity (high), fearfulness (low) and desire for reinforcement (high) (Mellen and Ellis, 1997; Savastano, Hanson & McCann, 2003; Laule and Whittaker, 2007). These criteria suggest that an animal will be interested and successful in a PRT program (Bloomsmith, Marr & Maple, 1998; McKinnley, 2003).

Training Methods

Via protective contact through a chain-link fence, 123 training sessions were conducted over 51 days, each averaging 4.8 minutes in duration. Animals were trained during normally high activity periods to increase likelihood of success (Ramirez, 1999). Two to four individuals were trained per session, during two training sessions per day. Behaviors trained are listed in Table 1. A variable training schedule was introduced to avoid session anticipation, a potential cause of frustration, which might have led to aggression (Ramirez, 1999). The trainer chose a focal animal at the start of each session based on which animals showed up and had not been trained in previous sessions. Systematic rotation was not used because not every focal animal was present at every session. Initially, sessions were kept to approximately five minutes, due to increased aggression observed during longer sessions; duration increased slowly over five weeks, up to 15 minutes per session without any contact aggression. The focal animal was reinforced for the chosen behavior by the lead trainer, while other nearby animals were fed by training assistants, and reinforced for non-interference with the focal animal and trainer.

Table 1. Behaviors trained to some or all of six focal monkeys.

Behaviors trained	Definition
Bridge recognition	Recognition that trainer’s whistle indicated delivery of primary reinforcement.
Manners	More dominant monkeys allowing less dominant, nearby conspecifics to accept food from trainers without aggression.
Point-follow	Trainer points the index finger at an individual, along with brief eye contact, followed by trainer walking toward a destination along the fence line with continued point toward monkey. Behavior criterion is monkey following trainer until bridge is sounded.
Target touch	Touching target upon presentation.
Target station	Remain in front of target, no contact with target required, for duration of session.
Target hold (verbal S ^d = “hold it”)	Grasping target with fingers until bridged.
Target discrimination	Touching only designated target and not touching another monkey’s target.
Recall to target	Moving toward designated target upon presentation.

Step 1. Approaching the Trainer

Initially, focal animals were reinforced for approaching the trainer with a regular keeper present, then reinforced for approaching the trainer without the regular keeper present. Once a relationship was established, a focal baboon was selected for each session. The trainer worked with the focal while assistant trainers reinforced surrounding animals for allowing the focal to receive reinforcement (Schapiro, Bloomsmith & Laule, 2003; Laule, Thurston, Alford, et al., 1996). Initially, more dominant animals were reinforced before subordinate animals (Schapiro, Bloomsmith & Laule, 2003) or at the same time. Once dominant animals allowed subordinate individuals to receive food, this policy was no longer strictly followed. During the project one monkey, Face, was incorporated into the program after consistently interfering, and was trained to allow subordinate monkeys to receive food in his presence.

Step 2. Visual Recall and Station on Individual Target

Each animal was assigned a visual symbol to act as a target, recall, and station. As an individual approached, his unique target was held to the fence and the animal was reinforced for touching it (initially) and maintaining contact until bridged (as training progressed) (See Photo 1). Once this behavior was reliable, the animal’s knowledge of his own target was tested by presenting him with both the correct target and an incorrect one, and reinforced for touching the correct target.

If an individual recalled to his correct target, he was reinforced and all other animals that approached were ignored by the lead trainer. Non-focal animals were reinforced by assistant trainers or lead

trainer on a variable ratio reinforcement schedule (Mellen and Ellis, 1997) for allowing the focal animal to participate uninterrupted.

**Record Keeping and
Creating the SOP**

Every training session was video recorded (Panasonic, SDR-S7) to keep accurate and reliable records on the duration of training sessions and how many sessions were needed for individuals to progress to the next step (Ramirez, 1999) (see Tables 2 and 3). A standard operating procedure (SOP) for training individuals in a large captive group was created using collected data. Please contact author for a copy.



Photo 1: Trainer hold target unique to a particular animal to test its recognition of the target as being its own.
(Photo by Laura Fischetti)

Results and Discussion

Behaviors Trained

Table 2. Number of sessions and total training time devoted to each focal animal.

Focal	Sessions	Total Time (min)	Average Time per Session (min)
Finger	21	78	4
Bigman	16	57	3.5
Brow	23	72	3
Mouth	12	34	3
Throat	11	21.5	2
Face	10	46.5	5
Avg	15.5	51.5	3.4

Table 3. Total time required for each individual to learn behaviors and average time required for all individuals to learn behaviors.

	Manners		Point-Follow		Target touch		Target hold up to 3 seconds		Target Hold on Sd "Hold It"	
	# of sessions	total time (min)	# of sessions	total time (min)	# of sessions	total time (min)	# of sessions	total time (min)	# of sessions	total time (min)
Finger	4	19.5	2	4.5	3	8	1	3	-	-
Bigman	-	-	1	5	1	3	1	3.5	2	6
Brow	-	-	2	5	5	10	1	4	-	-
Mouth	-	-	4	8	5	13.5	-	-	-	-
Throat	-	-	1	1	-	-	-	-	-	-
Face	3	17	-	-	6	25	-	-	-	-
Avg	3.5	18.25	2	4.7	4	11.9	1	3.5	2	6

Reinforcement Methods

High value foods (peanuts, dried fruits) were used during early training sessions, given only to the most dominant animals for allowing conspecifics to receive food. Very high value foods (berries, pretzels, marshmallows) seemed to motivate dominant animals to become aggressive toward conspecifics, prompting food stealing, so the use of these reinforcers was eliminated early on. Carrots and sweet potatoes were the most common primary reinforcement, as animals were willing to work for them, but were not as focused on other animals also receiving them.

Trainers

The study results indicate that training select individuals within a large social group is achievable with minimal staff time. Trainers had no prior relationship with animals in the group, which did not impact success (contrary to findings of Broder, 2008). The lead trainer was an experienced primate trainer, while assistant trainers had working knowledge of training theories, but no experience training zoo animals. Once a few baboons learned their target, only one trainer was needed per session, even with as many as 20 animals approaching the training area (see Photo 2). It is hoped that keepers with little training experience can be successful using the protocol created.

Using Positive Reinforcement to Decrease Aggression During Sessions

An initial concern was aggression stemming from food competition among animals being trained, and steps outlined in the previous section were taken to minimize this. Animals that exhibited incorrect behaviors were given an LRS (Least Reinforcing Scenario), lasting about three seconds, then the trainer continued the session. LRS included the whistle dropping from the mouth and removal of eye contact with no other change in body posture or position of trainer. The short LRS prevented monkeys from providing several incorrect, non-reinforced behaviors in a row, decreasing the likelihood of frustration. Initially, monkeys would leave during the LRS and attempt to solicit food from other trainers. The trainer using an LRS would announce it so other trainers would not accidentally reinforce the focal receiving an LRS. When the focal received no food from assistant trainers, he/she would return to the lead trainer, where training resumed following an additional three-second LRS.



Photo 2: Baboons approach the fence and trainer to show they have learned which is their unique target. (Photo by Laura Fischetti)

LRS was also utilized for any aggression during sessions. Sessions were only terminated if contact aggression was observed, or non-contact aggressive occurrences lasted more than two minutes without pause. Due to the high frequency of aggressive interactions within this troop, it was decided that terminating sessions following all aggressive incidences would be detrimental to the program (unlike McKinnley, Buchanan-Smith & Morris, 2003). Aggression toward juvenile animals that was perceived as discipline was followed by an LRS; then the session continued, concluding only if an escalation of discipline toward juveniles was observed.

The male that appeared most dominant was not trained to target first (unlike in Shaprio, Bloomsmith, & Laule, 2003), as this may not always be an option if an animal lower in the hierarchy is in need of immediate husbandry training. The dominant male was trained during randomly scheduled sessions while other males were also trained.

Voluntary Participation and Maintenance of Behaviors Across Training Sessions

The study relied on animals choosing to participate. There was one occasion when a focal (Big) animal that had already been trained to target, recall to target, point-follow and hold on target failed to appear for training for ten consecutive days. Upon returning, he was observed to have an injury possibly caused by a conspecific, and he refused to participate or approach the trainer. Initial concern was that social issues within the group had affected his training and that he would no longer be a training candidate. After watching a session from about 100 feet away on the 11th day, Big chose to continue participating on Day 12 and recalled all his prior training. Although this monkey chose not to participate at certain times, this had no detrimental effect on his overall training. His choice to resume training shortly after his disappearance and apparent displacement within the hierarchy suggests that training sessions are reinforcing for participants (Maple, 2007), and that even animals not at the top of the hierarchy will choose to participate without the need for separation from the group.

Fearful Animals

The presence of a more dominant individual resulted in inhibited responses by some lower-ranking monkeys. Baboons were trained to follow the trainer away from dominant conspecifics, which decreased inhibition. Animals seen to reject reinforcement were never offered food if they were in close proximity to more dominant monkeys. Over time, training has been shown to increase affiliative behavior (Laule and Whittaker, 2007) and reduce the need to move less dominant animals away from more dominant animals.

Within the focal group, three animals showed intense fear of the target upon initial presentation; two of those monkeys overcame their fear through very slow successive approximations over the course of the study. The third monkey was readily taking food off the target by the end and it is believed that within another week or two, he would have been touching the target. Over time, training has been shown to reduce fear levels in primates (Basset, Buchanan-Smith, McKinley, et. al., 2003).

Conclusions

Based on the results from the training procedures employed, the following conclusions may be drawn:

1. Individuals within a large social group can be trained to participate in husbandry-related behaviors without removal from the group and without training dominant animals first.
2. Training procedures that are sensitive to dominance relationships and aggression levels can reduce agonistic interactions during training sessions.
3. Minimal staff time is required for these training sessions, averaging 4.8 minutes per session and occurring no more than twice per day for each animal.
4. Initiating a training program can increase veterinary care for otherwise hard to separate animals.

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Bringing up the “Seattle Four” a Success for Humboldt Penguins

By R. Smith Bird, Keeper/Penguins
St. Louis Zoological Park, St. Louis Missouri USA

Abstract

In 2007 two pairs of Humboldt penguins (*Spheniscus Humboldt*), at the St. Louis Zoo’s Penguin Puffin Coast (PPC), successfully produced four offspring. These chicks have been raised to adults and are currently part of the founding population at the Woodland Park Zoo, Seattle, WA. Three of the chicks, Erika, Gonzo, and Sardiña, were parent-reared for 56, 59, and 52 days respectively; after which the PPC staff raised the chicks until fledging. The fourth chick, Anchoveta, was hand-reared. At 18 days of age she was joined by “Oscar”, a 21-day-old Gentoo penguin (*Pygoscelis papua*) chick (that was also being hand-reared). These two chicks were companions until fledging. The first chick, Erika, hatched in spring of 2007. All of the other chicks hatched in the late fall of 2007.

The staff combined AZA penguin husbandry techniques with their own penguin husbandry experiences to make this busy year a success. Summaries of natal care, acclimation, and hand-feeding will be discussed. Some differences were found between hand-reared and parent-reared chicks, however the chick growth weights were found to be similar between siblings and the growth rate differences between parents-raised and hand-raised chicks was minimal. These growth rate samples are too small to make any major conclusions, however they do show trends and may assist with improving future Humboldt chick husbandry. The content of this paper describes various methods and experiences encountered during the 2007 nesting seasons.

Introduction

In May of 2003 the St. Louis Zoo opened the Penguin and Puffin Coast (PPC). This unique polar seabird exhibit has an outdoor Humboldt penguin habitat, an indoor sub-Antarctic penguin species habitat, and a northwestern Puffin habitat. In 2007 the PPC staff successfully raised four Humboldt chicks. The first chick was raised in the spring and the other three chicks were raised in the Fall/Winter breeding. A Gentoo penguin chick was also being raised at this time. Although many institutions have raised these species, we did encounter some unique experiences that are worthwhile sharing.

On 11 May 2007 our first Humboldt chick, Erika, hatched. Prior to 2007 the St. Louis Zoo had raised four Humboldt chicks (to adulthood). Erika’s mother, Frankie, had gone through a series health challenges (Smith, 2006) but, the staff were confident that her health was stable enough to withstand any stress from being a parent. Frankie and her mate Juan both proved to be fantastic parents. During



Erika at Six Days of Age

a morning feeding on Day 56 Erika fled from the safety of the nest and into the exhibit pool. She swam across the pool (in her downy plumage) and was rescued by the keepers. For her safety it was decided that she was to be moved with her parents to off-exhibit holding. After two days the parents were returned to the exhibit. Erika was ready for weaning and conditioning to zoo life.

On 28 November 2007, Gonzo, PPC’s second Humboldt penguin chick hatched. On Day 59 Gonzo was observed standing in the nest box entrance. Due to the winter weather conditions it was decided to remove him from his family for

weaning and acclimation. On 25 December 2007, Anchoveta and Sardiña hatched. Both of these chicks had difficulties during piping so they were moved to a hatcher. Their parents, Jose and Eva, were given two dummy eggs. On 26 December 2007, the chicks were both helped out of their eggs. Sardiña was returned to her parents. In order to optimize our chances of success, it was decided that Anchoveta should be hand-raised. All four chicks survived and are now on exhibit at the Woodland Park Zoo. The following is a description of the techniques used to raise them and the evolution of our PPC chick rearing policies.

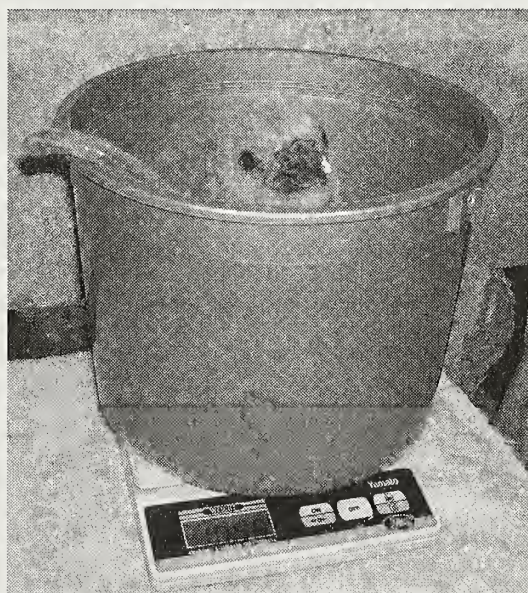
Methods

Penguin husbandry techniques used at PPC are similar to other institutions. The exhibit rockwork is hosed and scrubbed once daily. Betadine® solution is sprayed after cleaning to disinfect surfaces. For additional protection, a foot bath is used at the exhibit service entrance and changed daily. The footbath disinfectant is a 10% Vetra-Sept™ solution. The Humboldt penguin diet is approximately 85% Capelin (*Menida menidia*) with the remainder (15%) consisting of Rainbow Trout (*Oncorhynchus mykiss*) and medium, 12.7-17.78cm [5-7inches] Atlantic Herring (*Clupea harengus*). It is fed twice daily at 1000 and 1500hrs. The Humboldt collection “hand-feeds” at a station, making it easy to give each bird its daily vitamin and malaria prophylactic hidden in a “pill fish” (during the mosquito season). The birds are hand-fed twice daily. This is also a perfect time for the keepers to check each bird’s condition, etc.

Five of the Zoo’s 11 Humboldt penguin pairs are recommended SSP® pairs. Nest boxes are added in early February and removed in late May prior to molting time. They are set up again in late September through December. Six cave entrances arranged in a circle at the center of the exhibit’s rockwork lead into a nest room. These entrances have steel racks that hold Vari-kennel® (size 200) dog crates. The nest room has HVAC vents and a ceiling fan. This is the main nesting area for the collection. However, not all of the caves were selected and more penguin pairs were added to our collection in 2004. We decided to use nest rocks made from DekoRRa® Rock (102-FS model). The nest rock is 68.58 x 53.34 x 63.5cm (27 x 21 x 25 in.). We cut openings into the rock and use Vari-kennel® (size 100) bottom-lined with 2.5-7.62 cm (1-3 in.) river rock as the substrate. We offer 12.7-25.4 cm (5-10 in.) twigs to stimulate nest building. The adults eagerly take the twigs and immediately commence to display to one another. Each morning the burrows are checked for eggs. When an egg is discovered it is labeled with the egg log number and alpha/beta identification. After two weeks of incubation we begin candling the eggs weekly. Non-recommended eggs are replaced with wooden “dummy” eggs and the parents are allowed to go through a 42-day incubating cycle. This gives us the opportunity for fostering of other birds’ eggs or chicks.

The Zoo’s Bird Department policy prefers to allow the parents to rear their chicks. Once a chick hatches it is weighed daily. For the first three days the chick’s umbilicus is swabbed with Betadine® solution. The chick’s health is checked daily. Close attention is paid to their hydration and “target” 10% weight gains. If a problem occurs they are pulled for hand-rearing. The parents are fed four times daily. Brooding birds are fed through the nest rock entrance or by removing the nest box cover. The box bottoms are changed if they become too soiled.

At approximately 55 days the parent-reared chicks are pulled for conditioning and weaning. This is done in off-exhibit holding. To ensure for good communication, all chick data is kept in record sheets and significant chick data is entered in the Zoo’s data system. Weekly meetings are held to keep everyone on the “same page”. These were our first Humboldt chicks in the new facility (PPC), so some of our weaning methods had minor variations. Chicks are weighed first thing



Penguin chick in bucket on scale for daily weighing.

in the morning. Force feedings were given four times daily. To start we used hydrated capelin, lake smelt, and herring filets. Vitamin supplements include: Poly-Vi-Sol® (0.1ml/300g), 100mg Vitamin B-1, and 100 IU of vitamin E. Supplements are hidden inside the capelin. We rationed each feeding at 10% of first body weight. The chick's mandible is grabbed firmly but gently by one hand and



Penguin chick being force-fed.

the neck is stretched while the other hand is used to push the whole fish down the throat. Caution must be used to avoid covering the chick's tracheal opening during the force-feeding. If a fish is masticated it is discarded. It takes about three days to one week for the chicks to adjust to this method. As the feedings progress the chicks begin to show swallow reflex (this can be stimulated by stroking the neck) and the keepers begin to push the fish only partially down the throat. As the chick learns to swallow, less and less of the capelin is pushed into the mouth. At this point the keepers begin to use their fingers in a "V" or a circle around the beak to encourage a feeding response.

Each chick progresses at different rates, and flexibility in the keeper's methods is crucial. As the chicks improve we cut their feedings down to three times daily. All three parent-reared chicks were weaned and conditioned in a similar fashion. Gonzo hatched on 28 November 2007. At 59 days we began weaning. By Day 67 he had been weaned and was hand-feeding. Sardiña hatched on 25 December 2007. At 40 days of age we began to wean her. She began hand-feeding on Day 59. Once the chicks are consistently hand-feeding, the chicks records are limited to the Zoo's data base.

Sardiña's sibling, Anchoveta, was hand-reared. We decided to hand-rear her because her parents were new at raising chicks and we felt they would have better success raising only one of their two chicks. Both of Jose and Eva's eggs had trouble pipping and seemed dry. They were moved to a hatcher, and with assistance the eggs hatched on 25 December 2007. On 26 December 2007 Sardiña was placed under her parents (that were incubating wooden eggs) and Anchoveta was placed in a brooder for hand-rearing. In general the hand-rearing followed the protocol from AZA Penguin TAG Husbandry Manual and SeaWorld DVD hand-rearing guidelines. Anchoveta was fed krill (*Euphasia superba*) and fish formula (SeaWorld recipe) from a syringe with a catheter attached as a feeding tube. The formula was warmed in a jar dipped into a dish with hot water. The formula was fed slowly to prevent the chick from aspirating. The chick's feeding response is stimulated by our making a "V" shape around her bill with our first two fingers. We started with five feedings daily at 0700, 1100, 1400, 1700, and 2100hrs. On Day 11 the first fish filet is given. As the chick progressed, the formula to fish ratios changed following the husbandry guidelines. We monitored her respiration, sleeping posture and feeding response for any signs of overheating (lying down with feet out and/or reduced appetite).

On Day 18 she was placed in a Rubbermaid® tub with a heat lamp and a blue ice block wrapped in a towel. At this time a Gentoo chick "Oscar", that was also being hand-reared joined Anchoveta for companionship. On Day 21 we began putting the vitamin supplements, B-1 and E, (and later Poly-Vi-Sol® w/Iron) in the fish and cut her feeding to four times daily. On Day 42 her formula was discontinued and she began hand-feeding at the final feeding of Day 46. By Day 56 Anchoveta hand-fed consistently for all the primary keepers. Anchoveta progressed well and on Day 70 her information only entered into the Zoo's data system. During the mosquito season our adults are given Sulphadiazine/Pyrimethamine/Folic acid 125mg/4mg/400mg Malaria prophylactic. We began this treatment for all of our chicks raised during warmer parts of the year at 60 days of age.

Anchoveta had contact with other penguins. She was raised with a Gentoo penguin and later joined by Sardiña and Gonzo. All three (and the Gentoo) were allowed to interact with a Magellanic Penguin (*Spheniscus magellanicus*) pair during their final weeks of her acclimation. The chicks were socially acclimated to the Humboldt colony by allowing adult “visitors” to come inside our off-exhibit holding room. They would also enter the room through the access door when we cleaned the outside exhibit. All of the Humboldt chicks were introduced to swimming and had full access to the holding room pool. The penguin adults were also used to entice the juveniles into swimming. All four of the juveniles went swimming with little hesitation. Once the birds were consistently hand-feeding and could dive without any panic, they graduated to the outdoor exhibit to permanently join the colony.



Humboldt penguins Gonzo, Sardina, and Anchoveta and Gentoo penguin Oscar learn swimming techniques in an off-exhibit pool.

Discussion

Our success at raising these four chicks was through good communication and keeper flexibility. This was not the easiest task for our team. Many of us had different degrees of penguin and hand-rearing experience but none of the keepers had raised a Humboldt penguin chick.

This penguin species showed very little hydrophobia. Our experiences with raising King penguins (*Apelodytes fosteri*) and Gentoo penguin chicks had required some acclimation through wading and then varying the depth of water in a pool and eventually the chicks would become more calm and start swimming. The adult penguin ‘visitors’ may have helped the chicks overcome this phobia

Anchoveta’s growth curve is slightly above the median of the hand-rearing growth data in the AZA Penguin Husbandry Manual (2003). It is interesting that sibling growth rates were very close. Erika and Gonzo’s weight gain percentages were close. Anchoveta being hand-reared began growing at a slower rate than Sardiña, however by Day 40 when she had nearly weaned, her weight was near Sardiña’s. Thereafter, both had similar growth rates. This is most likely due to the similarity of their diets of whole capelin (Sardiña’s parents also ate trout and herring). When we compare all four chicks’ growth weights, Erika’s and Gonzo’s growth curves (see Fig. 1) are higher than Sardiña’s and Anchoveta’s. It is interesting that the curves for both siblings were similar, especially since Anchoveta was hand-reared, and Sardiña was parent-reared. Our hand-raising techniques proved to be good since Anchoveta’s curve is above the AZA manual’s curve averages. As expected all the parent-reared chicks were above this curve (author was unable to locate a curve for parent-reared chicks at a zoo).

In the beginning of our penguin rearing experience it was believed that the fish combined with Vitamins B-1 and E would be sufficient nutrition for our chicks. However the first Gentoo chick we raised in 2006 developed an anemic condition. We remedied the anemia problems by using Poly Vi Sol® with Iron supplement (0.1ml/300g). During the raising of our first Humboldt chicks we also found anemia problems so, it was decided that the Poly Vi Sol® with Iron supplement was important to reduce any future risk of anemia for all of our future penguin chicks. This product has been added to our protocol.

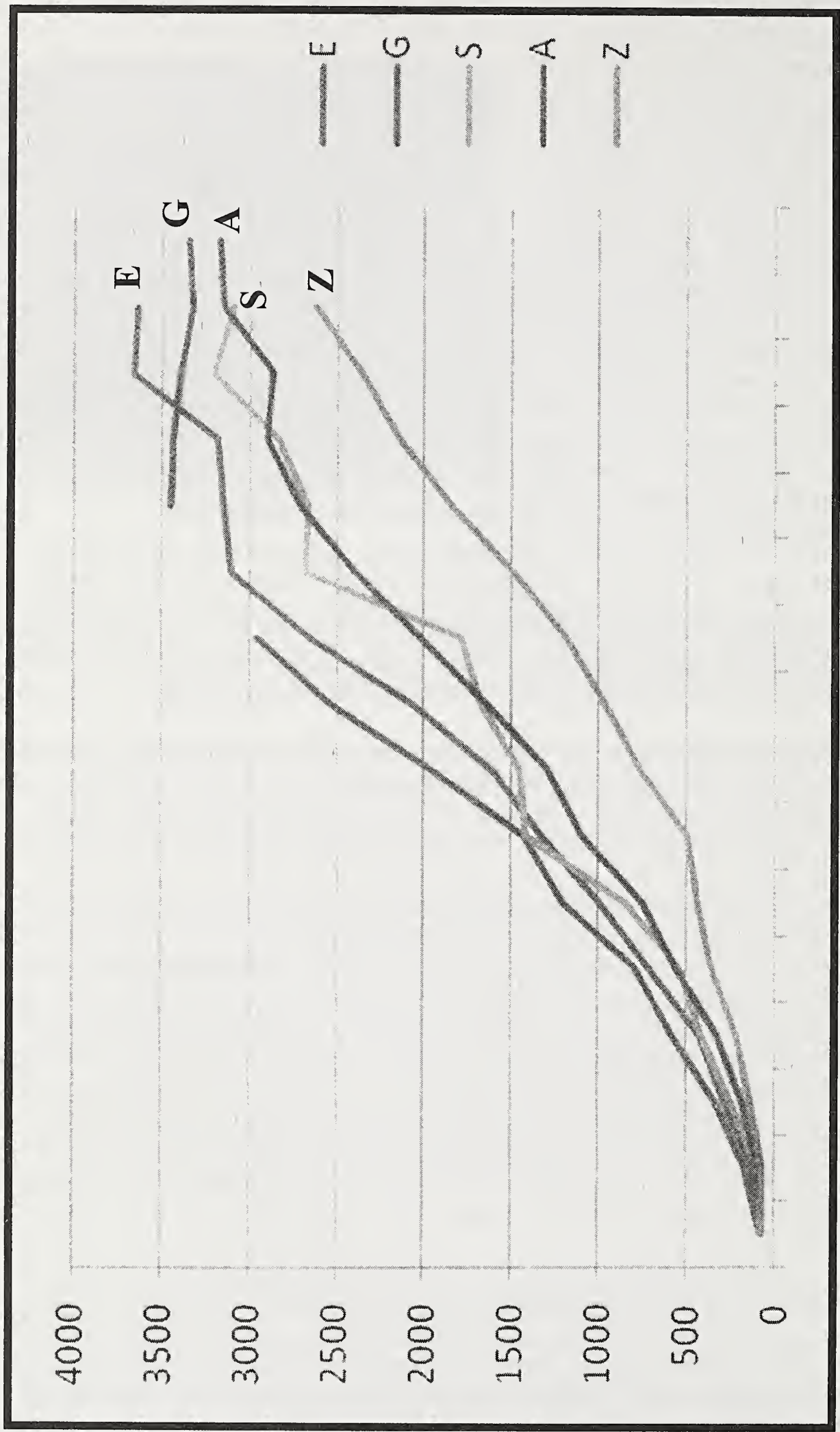


Figure 1. Humboldt Penguin Chick Growth Data.

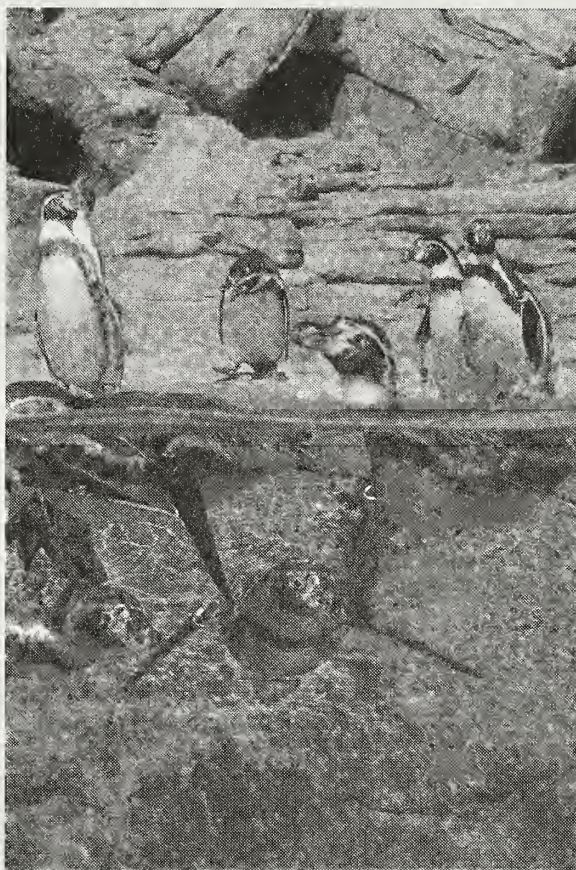
Growth curve data for Anchoveta (A), Erika (E), Gonzo (G), Sardiña, and AZA husbandry manual (Z). (The data in Figure 1 represents weight taken on the 5th day or the closest day to that date. AZA data is from Fig. 20 Penguin Husbandry Manual 2003).

The Zoo's Bird Department's policy is to have the parents rear their chicks; Anchoveta's success and short-term weaning cannot be overlooked. In fact, her conditioning was minimal since the keepers were very much a big part of her life. This early keeper acclimation contributed to her learning to hand-feed more quickly than the others. Anchoveta had contact with other penguins. She was raised with a Gentoo penguin and was later joined by Sardiña and Gonzo. All three were allowed to interact with a Magellanic penguin pair during the final weeks of their acclimation. Erika was introduced to the Humboldt penguin colony at the start of fall 2007. She had become well-acclimated to daily feedings with the adults. The other three juveniles joined the colony together. All of them acclimated easily. Sardiña was the most timid at feeding time; otherwise she interacted well with the colony. All of the juveniles joined the rest of the Humboldt colony. On 28 March 2009 the four Humboldt juveniles (the "Seattle Four") along with another adult Humboldt (Radar) were shipped to Woodland Park Zoo.

Conclusion

Raising the "Seattle Four" was a success for our Penguin Puffin Coast team. Through careful planning, patience, and flexibility we were able to raise Humboldt penguins within one year. The hand-reared chick acclimated to zoo life with minimal difficulty. The three parent-reared chicks were more difficult to teach hand-feeding, but their acclimation to swimming and socializing went smoothly.

The greatest result is our team has developed techniques and policies that we can refer to when we raise chicks in the future. All of the team has had some natal bird experience, but now everyone has experienced together raising the "Seattle Four". These experiences are not unique, but our success has strengthened and matured the PPC team. We look forward to future chick raising challenges.



The "Seattle Four" enjoying their new exhibit at the Woodland Park Zoo, Seattle, WA. (Photo courtesy of Woodland Park Zoo)

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 Smith Richard, 2006, Frankie the Penguin's Fungal and Malarial Adventure. Proceedings of the
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Products Mentioned in the Text

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(Unless otherwise noted, all photos by the Author)

New Animal Species Discovered in Borneo

Wildlife researchers said in late April that they had discovered around 120 new species on Borneo island, including a lungless frog, the world's longest insect and a slug that fires "love darts" at its mate.

Conservation group World Wildlife Fund (WWF) listed the new finds in a report on a remote area of dense, tropical rainforest that borders Malaysia, Indonesia and Brunei on Borneo. The three governments in 2007 designated the 220,000-square-kilometre (88,000-square-mile) area as the "Heart of Borneo" in a bid to conserve the rainforest.

"We have been finding on average three new species a month and about 123 over the last three years, with at least 600 new species found in the last 15 years," said Adam Tomasek, head of WWF's Heart of Borneo initiative. "The new discoveries just show the wealth of biodiversity on Borneo island and the promise of many more future discoveries that could eventually help cure illnesses like cancer and AIDS and contribute to our daily lives," he added.

The "Heart of Borneo" region is home to 10 species of primate, more than 350 birds, 150 reptiles and amphibians and about 10,000 plants that are not found anywhere else in the world, the report said. Among the finds are a 7cm (three-inch) flat-headed frog, known as *Barbourula kalimantanensis*, discovered in 2008, which breathes entirely through its skin instead of lungs. Researchers in the same year also discovered *Phobaeticus chani*, the world's longest stick insect, with a body 22 inches long. Only three specimens of the creature have ever been found. Another interesting find was a long-tailed Ninja slug (*Ibycus rachelae*) that uses "love darts" made of calcium carbonate to pierce and inject a hormone into a mate to increase the chances of reproduction.

The WWF urged governments act sensitively when developing the area's economic potential. "We know that it is impossible for the three governments not to have development in mining, oil palm plantations and logging in the area," Tomasek said. "What we want to have is a balance so that we have a foundation of conservation and sustainable development in order to protect this unique site for future generations," he added.



One of the more unusual species discovered was this 22-inch long stick insect. (Photo: Orang Ansil/WWF)

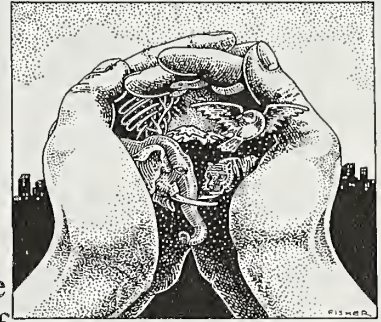
Indonesia and Malaysia, the world's two largest exporters of palm oil, account for 85% of global production. Palm oil -- used extensively across the globe for biofuel, processed food and toiletries -- has been vilified by environmental campaigners for causing deforestation and threatening the survival of near-extinct species. Tomasek said the "Heart of Borneo" initiative is also important for protecting the habitat of endangered species such as the pygmy elephant (*Elephas maximus borneensis*), orangutan (*Pongo pygmaeus*), and clouded leopard (*Neofelis nebulosa*).

"In many ways this is the last stronghold for the long-term survival of these species," he said. The Sumatran rhinoceros (*Dicerorhinus sumatrensis*) is one of the world's most endangered species, with only about 200 remaining in the wild, up to 180 in Indonesia and the rest in Malaysia. The Bornean sub-species is the rarest of all rhinos, with just 30 left in the wild on Borneo island. Conservationists also warned the world has less than 20 years left to save about 50,000 to 60,000 of the charismatic red-haired orangutans left in the wild. (Source: www.asiaone.com.sg 4/23/10)

Conservation/Legislative Update

Column Coordinators: *Becky Richendollar, North Carolina Zoo*
and *Greg McKinney, Philadelphia PA*

*This month's column was put together by
column co-coordinator Becky Richendollar*



Controversial Ruling in Germany Sparks Debate - In 2008 three tiger cubs were euthanized at Magdeburg Zoo in Germany. In August of this year, a German court found the zoo's director as well as three of its employees guilty of breaking animal rights laws in that country. The cubs were born after the zoo discovered that their sire was not a full blooded Siberian tiger (*Panthera tigris altaica*), and in fact was a hybrid of two subspecies.

The World Association of Zoos and Aquariums stands by the zoo and its employees. "[Conservation] management takes on many forms and can, on occasion, include the euthanasia of individuals. Humane euthanasia, as a component of population management, and based on scientific analysis of the *ex situ* (i.e. captive population) to ensure its long-term sustainability, is supported by WAZA as acceptable," the statement reads.

Animal rights groups are thrilled with the ruling and consider it a victory. The zoo maintains that in its mission to protect endangered species it is sometimes necessary to make difficult decisions about euthanasia.

None of the zoo employees will have to serve jail time, although director Kai Perret will have to pay a fine. (Source: *mongabay.com*, August 11, 2010)

"Extinct" Fox Discovered in Yosemite - While looking through grainy photographs taken from a camera trap, federal wildlife technicians at Yosemite National Park discovered an image of a fox thought to be extinct in the area. Saliva samples from the bait bag confirmed their suspicions. The Sierra Nevada red fox (*Vulpes vulpes necator*) has not been seen in this region since the 1920s.



(Photo: *SierraForestLegacy.com*)

The Sierra Nevada red fox lives at high elevations, eating small mammals and birds. The fox has a reddish-colored head, back, and sides; black backs of the ears; black "socks" on their feet, and a white-tipped tail. Another population of 20 Sierra Nevada red foxes exists 150 miles north of the area in which this fox was sited. However UC Davis wildlife genetics researchers have discovered that the fox seen outside Yosemite differs genetically.

"We got back to the Forest Service and said, 'Yep. You've got yourself a Sierra Nevada red fox there, and it's distinct from the Lassen Peak population,'" said UC Davis researchers.

"It's got a genetic signature that we haven't seen outside of the skulls and skins of museum specimens collected before 1926."

Researchers and U.S. Forest Service officials went to work immediately setting up additional trap cameras around the area to try and discover the number of individuals living in the region. They are eager to get a count. "We now have two small, isolated populations and we don't know how big the second group is," said officials. "That's about as endangered as you can get."

There is no word yet as to whether this discovery will put a halt to the snowmobile course slated to be built in the area. (Source: *LA Times*, September 5, 2010)

U.S. Senate Approves Wildlife Stamp - In August, the United States Senate approved a bill that will create a new postage stamp, the proceeds of which will go towards conservation efforts around the world. The World Wildlife Fund has been working on just such a move since 2000. The bill will prompt the US Postal Service to create a premium stamp. The cost of the stamp will be above the regular price for a first class stamp, and it is this additional revenue that will be used to fund conservation projects.

“This legislation will give people the opportunity to not only demonstrate their commitment to wildlife conservation, but also take meaningful action by financially supporting on-the-ground efforts to protect tigers, elephants, rhinos and many other threatened and endangered species,” said Ginette Hemley, WWF’s senior vice president for Conservation Strategy and Science.

The proceeds from the stamp will go in to the US Fish and Wildlife Service’s Multinational Species Conservation Fund. This fund awards grants to combat poaching, protect habitats, and assist in educational programs around the world. The fund is already credited with helping many species around the world, including rhinos and tigers.

“At a time when there is much concern about budgets and deficits, this program represents an innovative way to fund critical conservation work without relying on any taxpayer funding. All of the revenue generated will come from members of the public who choose to support species conservation by purchasing a premium stamp”, said Hemley. (Source: *WWF News*, August 2, 2010)

SeaWorld Orlando Fined \$75,000 - SeaWorld Orlando has been fined \$75,000 following the tragic death of trainer Dawn Brancheau in February of this year. The Occupational Safety and Health Administration (OSHA) issued a citation to SeaWorld for exposing its workers to “struck-by and drowning hazards” during training sessions. The citation was known as a “willful” violation, which is defined as a violation committed with “plain indifference to or intentional disregard for employee safety and health”.

The OSHA investigation found that Tilikum, the orca involved in Brancheau’s death, was one of three whales involved in the death of a trainer in 1991 at Sea Land of the Pacific in Vancouver, British Columbia, Canada. Trainers at SeaWorld were not allowed to swim with Tilikum because of his history, but were able to interact with him from the edges of the pool. (Source: *ENS*, August 24, 2010)

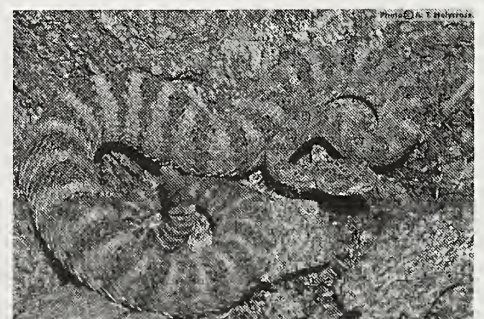
Elle MacPherson Uses Rhino Horn? - Despite multiple studies showing that rhino horn has no medicinal properties, people around the world continue to use it. Supermodel Elle MacPherson is one of these consumers. MacPherson, recent host of Britain’s Next Top Model, told an interviewer earlier this year that she uses rhino horn because “it works for me”.

The consumption of rhino horn, which encourages illegal poaching, has led to a sharp decline in all five rhinoceros species. In three of the five species, poaching has led to Critical Endangerment. In the wild there remains only 50 Javan rhinos and 250 Sumatran rhinos. Poachers usually tranquilize the rhinos to saw off the horn, and then the rhino slowly bleeds to death. There have been multiple reports of rhinos still alive and wandering around parks slowly bleeding to death.

Later MacPherson apologized and stated that she had never actually consumed rhino horn. Whether or not that is true, the careless comments made by MacPherson can only be detrimental to the world’s rhinoceros populations. (Source: *Mongabay.com*)

Snake Escape Causes Alarm in Atlanta - In late August a female tiger rattlesnake (*Crotalus tigris*) escaped from Zoo Atlanta. The snake was found three days later at a home near the zoo and was killed by the home owner. The snake, along with 15 other venomous snakes, was being held at Zoo Atlanta after they were confiscated by US Fish and Wildlife.

The animal escape has been attributed to human error and zoo officials have expressed concern over the incident. “We’re



(Photo: <http://www.reptilesandamphibians.org>)

disturbed this happened to start with,” zoo president and CEO Raymond King told The Associated Press. “Clearly some errors have been made. Most importantly, we are determined to learn from this incident.”

While some visitors claimed the zoo did not offer enough information, zoo workers informed the media, the neighborhood association, the Georgia department of natural resources, and the local hospitals about the escape. The zoo also had a large number of staff looking for the snake, which they believed to still be on zoo grounds. Officials at Zoo Atlanta have apologized for the incident. (Source: Associated Press, August 30, 2010)

Third Oldest Chimp Becomes Mom - Susie, a 56-year-old chimpanzee living at Sunset Zoo in Manhattan, Kansas gave birth to a female in late August. Susie is thought to be the third oldest chimpanzee in captivity in the United States. Keepers had made the decision to take Susie off of birth control because they considered her too old to have any offspring.



(Photo: DiscoveryNews.com)

Mother and baby are doing very well and have been under observation by trained volunteers and staff since the birth. Julian, Sunset Zoo's sole male chimpanzee, is the father.

While the pregnancy came as a surprise to zoo officials, they had no need to worry about Susie's mothering skills. Susie has proven to be a great mother to the female infant, caring for her from her birth.

In the wild, chimpanzees live 40 – 45 years on average. Susie is the third oldest chimpanzee held by an Association of Zoos & Aquariums-accredited zoo and has been under the medical care of the Kansas State University veterinary team since her pregnancy was confirmed. (Source: huffingtonpost.com, August 25, 2010 and Sunset Zoo website)

Survey Begins on Elephants in Indian Zoos - Concerned about the condition of zoo premises, the Central Zoo Authority (CZA) has formed a committee to carry out field appraisal of elephants in large zoos, including the Delhi Zoo. The committee will evaluate if the zoo premises are hygienic and spacious enough for the pachyderms to lead a healthy life.

The committee was formed by the CZA after it received requests from large zoos across the country to re-consider the zoo regulating body's November 2009 circular. The circular had proposed shifting all elephants in zoos to national parks, sanctuaries and tiger reserves. "Elephants are large animals, they require more open areas and therefore, need to be shifted," the circular had said.

"The committee, comprising four members, has been formed as per the Ministry of Environment and Forest's directions. It has been asked to submit its report as soon as possible," said Dr. Brij Kishor Gupta, CZA's Evaluation and Monitoring Officer.

The committee will evaluate zoo facilities and arrangements with respect to animal health and also take a look at whether the elephants' accommodation was adequate enough. "The available manpower would also be assessed," the officer said.

CZA's earlier order was the result of a survey of zoos. There are 140-odd elephants in 26 zoos and 16 circuses across the country. Delhi's National Zoological Park (NZP) has three elephants, one of them being an African elephant. (Source: HindustanTimes. Com 9/13/10)

Tylenol-loaded Mice Dropped from Air to Control Snakes - Dead mice packed with acetaminophen, strapped to pieces of cardboard and dropped from helicopters may help control one of the big headaches for the Pacific island of Guam – the brown tree snake (*Boiga irregularis*).

The U.S. Department of Agriculture has begun dropping the expired rodents packed with 80mg of the generic equivalent of Tylenol® on the forests of Naval Base Guam. Since scientists discovered

that the household pain reliever was deadly to the brown tree snakes, they've been trying to figure out how to get it to where many of the serpents live in the canopies of the island's forests, according to a report in *Stars & Stripes*. The Tylenol®-loaded mice are attached to two pieces of cardboard joined by paper streamers that snake exterminators hope will catch on tree branches, providing deadly snacks for snakes at those heights, according to the *Stripes* report.

The aerial attack on the tree snakes is designed to augment current trapping systems, which are placed around ports and airports to prevent the snakes from hitching rides to other Pacific islands such as Hawaii and causing the same ecological nightmares they've been responsible for on Guam.

"The brown tree snake traps that you see around Guam are actually the most effective trap for catching snakes in the world," USDA Assistant State Director Dan Vice told *Guam Newswatch*. "Most of the traps that people see however are sitting on a fence or on a port. And they're targeting the few snakes that might get to that fence."

So the mouse bombs have begun falling on the jungle forests, where the USDA says there can be as many as 20 brown tree snakes per acre, one of the highest snake densities recorded anywhere in the world. The USDA says brown tree snakes have wiped out Guam's native populations of forest birds since being accidentally introduced to the island half a century ago, probably after they stowed away on a ship or plane from their native range in Australia, Papua New Guinea and the Solomon Islands. And because there are no native predators on Guam, officials say poisoning the snakes is the only way to control the population. The snakes take an economic toll, too, becoming entangled in overhead electrical wires and causing power outages that cost the island millions of dollars in repairs and lost work.

If the current experiment works – scientists will know because they're also packing the dead mice with radio transmitters for the snakes to ingest – death from above will be coming for snakes at the island's Anderson Air Base next year, according to *Guam Newswatch*. Success there could see the program expand island-wide. (Source: *Guam Newswatch.com* 9/7/10)

SeaWorld Receives 40 Oil-impacted Turtles from Audubon Zoo - SeaWorld Orlando's Animal Rescue and Rehabilitation Center is coming to the rescue of 40 New Orleans green sea turtles (*Chelonia mydas*) affected by the Gulf oil spill. Oil was cleaned off of the turtles at Audubon Nature Institute in New Orleans and SeaWorld's experts plan to provide daily care for the turtles before reintroducing them into the wild.

SeaWorld has received 77 Gulf disaster-impacted turtles since June, and the rehabilitation center has worked with state experts to release 62 of them in into Florida's waters. (Source: *ABC ActionNews.com* 9/9/10 By Krystal Roberts)

And in a related story...

Deepwater Doom: Extinction Threat for World's Smallest Sea Horse - The Gulf of Mexico oil spill this year and subsequent cleanup efforts could drive the world's smallest sea horse into extinction, warns the Zoological Society of London and its marine conservation organization Project Seahorse (<http://www.zsl.org/conservation/regions/asia/project-seahorse/>).

The tiny dwarf sea horse (*Hippocampus zosterae*), which grows to a maximum length of 2.5 centimeters, can be found only in the ocean waters off the Gulf Coast.

"All of the sea horse populations in the area will be affected, but the dwarf sea horse is at greatest risk of extinction because much of its habitat has been devastated by the spill," Project Seahorse director Amanda Vincent said. According to Project Seahorse, the dwarf sea horse is particularly vulnerable due to its small size, limited habitat, inability to migrate great distances, and low birth rate. The fish also mate for life, so the loss of even one breeding parent is doubly dangerous to the species' long-term reproductive health. The Deepwater oil spill occurred during the sea horses' primary breeding time.

Another problem is that the dwarf sea horse, unlike its cousin sea horse species, often lives close to

the ocean surface in floating mats of sea grass. Not only did spilled oil accumulate in these mats, BP burned many of them to prevent them from carrying oil onto the shore. According to Project Seahorse's press release, "The burning of the mats has killed many marine animals while depriving others of their habitat and exposing them to further toxicity. Sea grass is vital to the long-term health of coastal ecosystems, sheltering marine animals, acting as fish nurseries, improving water quality and preventing erosion."

Meanwhile, Project Seahorse experts also express fear that the dispersants used to treat the oil spill will add further toxicity to the dwarf sea horse's habitat.

Project Seahorse is calling on BP to use booms and skimming to remove the remaining oil in the Gulf. The method is more labor-intensive, but the group says it will cause less environmental damage to the species in the region.

Dwarf sea horses, also known as "pixies," are pricey acquisitions for aquarium enthusiasts. One site, Seahorse.com, has them listed for \$75 each and warns customers that they are "very delicate" and "for experts only." (Source: *Scientific American.com* 9/8/10 by John Platt)

\$300,000 Needed to Help Save Last of Javan Rhinos - An international partnership is seeking to raise \$300,000 in a race against the clock to ensure the survival of the last estimated 48 Javan rhinoceroses in Indonesia — all found within Ujung Kulon National Park in Banten.

Operation Javan Rhino started on 21 June and is an initiative of the International Rhino Foundation and Indonesian Rhino Foundation (YABI). Its goal is to create 4,000 hectares of expanded habitat to encourage population growth in the national park, a rare patch of wilderness on the western tip of one of the world's most densely populated island. The project is supported by the Ministry of Forestry, which allocated land for it inside the national park.

However, all the improvements needed for the expanded habitat, specifically to help protect the species from the threat of extinction by a single natural disaster or introduced disease, will be shouldered by the nongovernmental organizations.

"Having all the eggs in one basket isn't a good thing for any species," Susie Ellis, executive director of the International Rhino Foundation, told the *Jakarta Globe*.

"With the help of the Rhino Foundation of Indonesia, the Worldwide Fund for Nature, Save the Rhino and the Indonesian government, we have committed to improving the available habitat for Javan rhinos to increase and spread out the population."

Widodo Ramono, executive director of YABI, told the *Globe* that \$650,000 was needed for the two-year project, with \$350,000 so far having been secured from the NGOs' own resources. "This funding is all purely coming from the NGOs; there is no special allocation from the government," he said. "But they have already provided the land and the human resources, so everybody is doing their bit."



(Photo: OracleThinkQuest.com)

Widodo said it would take two years to physically prepare the rhinos' habitat near Mount Honje. The money for the project will be used to improve water and food sources, build guard posts and electric fencing, construct patrol routes and hire rangers to patrol the area.

Additionally, 60 camera traps donated by the Aspinall Foundation in January 2010 will be used to gather data about how many rhinos remain in Ujung Kulon. Adhi Rachmat Hariyadi, site manager for WWF Indonesia's project in the park, said the cameras were crucial to keeping track of the rhino population. "So far, from the videos we have analyzed, we've identified 27 individual rhinos and extrapolated a maximum of 47 animals in the park, which still needs to be confirmed by surveys on the ground," he said. (Source: *JakartaGlobe.com*)

World First as British Museum First to Breed Indian Beetle in Captivity - A museum in Liverpool has achieved a world first by successfully breeding an Indian ground beetle in captivity. Last year India sent Liverpool's World Museum Bug House eight of the ground beetles (*Anthia sexguttata*) with the intention of breeding them, something never successfully achieved before. Seven of the beetles died leaving only one female left who staff believed would not survive for very long.

The female had burrowed away eggs in the sand which went unnoticed by staff until one hatched. Paul Finnegan, education team leader at the Bug House, believes the secret to their success is the sand/cement substrate he used in the tank.

It is made of one part cement to 10 parts sand and is usually used in the breeding of kingfishers. As soon as the new beetle was spotted London Zoo confirmed it was the first time the Indian ground beetle had been bred in captivity.

Mr. Finnegan said: "I'm so proud to be part of the team who have successfully bred this species of beetle in captivity. This is really important because we can publish our daily records now, meaning that other breeders now have the information to help them breed this particular species." (Source: *DailyMail.com* 9/9/10)



(Photo: Wikipedia)

Haiti's Fragile Ecosystems Facing Disaster - While the eyes of the world have followed the effect of Haiti's devastating earthquake on Port-au-Prince, an ecological disaster has been quietly unfolding elsewhere in the country. The mountainous forests of Haiti's Massif de la Hotte region have more critically endangered species than anywhere else on earth, according to Alliance for Zero Extinction, a global initiative of 52 conservation organizations.

The area has 42 mammals, birds, reptiles, plants and amphibians on the International Union for Conservation of Nature's (IUCN) Red List of Globally Threatened Species. More importantly, 13 species of frog on the verge of extinction live only here. The Alliance for Zero Extinction reports nowhere else on earth has more than nine such species. However, only 3% of Haiti's original forests remain and they are disappearing at a rate of 10% every five years, according to a group of conservation groups including Birdlife International and the Zoological Society of London. The forests are being cut down by desperately poor communities who chop the trees for firewood and then use the land to grow crops, the conservationists said.

The Massif de la Hotte region suffered further strain after January's earthquake when refugees from the capital Port-au-Prince doubled the size of the local population. "It's slash and burn subsistence agriculture that comes at the expense the forest," said David Wege, of Birdlife International. "People are just trying to eke out a living by cutting down trees for fuel and charcoal, and then using the land for agriculture. A bag of charcoal can fetch \$30, which is a significant economical driver to people earning about \$1 a day. The consequences are landslides, mudslides, erosion and flooding. The people know the long-term impact but they are just trying to survive."

Birdlife International, the Zoological Society of London and Durrell Wildlife Conservation Trust recently secured \$450,000 from the UK government's Darwin Initiative to work with Haitian NGOs, Societe Audubon Haiti and Fondation Macaya, helping local communities find alternative income without destroying the forest. Wege said: "Protecting the environment immediately comes down to helping local people with their livelihoods, because they are the same people who are impacting the environment. "We need to help people survive better with less impact on the environment, so our involvement has to start at a community level." Examples of the work in helping reduce the community's impact on the forest include piping fresh water from natural springs into villages, which saves people from having to cut down trees to reach the springs. The NGOs have also established tree nurseries, growing trees for reforestation and giving employment to local people. (Source: *By Catriona Davies, for CNN* 9/10/10)

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